The UNESCO COURIER

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deserts

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AN INTERVIEW WITH
THÉODORE MONOD

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1994: International Year of the Family

The United Nations has proclaimed 1994 the International Year of the Family, with the theme: "Family: resources and responsibilities in a changing world". Meetings, media campaigns and other activities will be staged throughout the Year, to which UNESCO will contribute by sponsoring a number of events including an exhibition entitled The Family Seen Through Children's Eyes, *organized by the International Museum of Children's Art in Oslo (see our October 1991 issue on Children in Danger). In the exhibition, which will be displayed at the Grande Arche de la Défense in Paris from 6-28 January and will then travel to Costa Rica, New York and Vienna, children from all over the world will present their views on marriage, divorce, war, the environment, religion, illness and death, and on what it means to have no family. Above,* My Family, *a drawing by Kantilya Sachobra, age 6 (India).*

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"The Governments of the States parties to this Constitution on behalf of their peoples declare,
"that since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed ...
"that a peace based exclusively upon the political and economic arrangements of governments would not be a peace which could secure the unanimous, lasting and sincere support of the peoples of the world, and that the peace must therefore be founded, if it is not to fail, upon the intellectual and moral solidarity of mankind.
"For these reasons, the States parties ... are agreed and determined to develop and to increase the means of communication between their peoples and to employ these means for the purposes of mutual understanding and a truer and more perfect knowledge of each other's lives..."
EXTRACT FROM THE PREAMBLE TO THE CONSTITUTION OF UNESCO, LONDON, 16 NOVEMBER 1945

THÉODORE MONOD

talks to Michel Batisse

Théodore Monod is a naturalist who himself belongs to a disappearing species: that of the explorer-scientists who travel to remote regions to satisfy their passion for knowledge. In his Paris workplace, the Ichthyology Laboratory of the Muséum National d'Histoire Naturelle, he welcomed me amid shelves packed with books, phials, preserving jars, fishes' jaws, samples of rocks and stone tools. He has travelled far and wide through his beloved Sahara and—at the age of ninety-one—is currently preparing for his "last long-distance expedition by camel". As well as a scientist, Théodore Monod is also a man of peace and convictions, who has fought tirelessly for the respect of human rights and the defence of Nature.

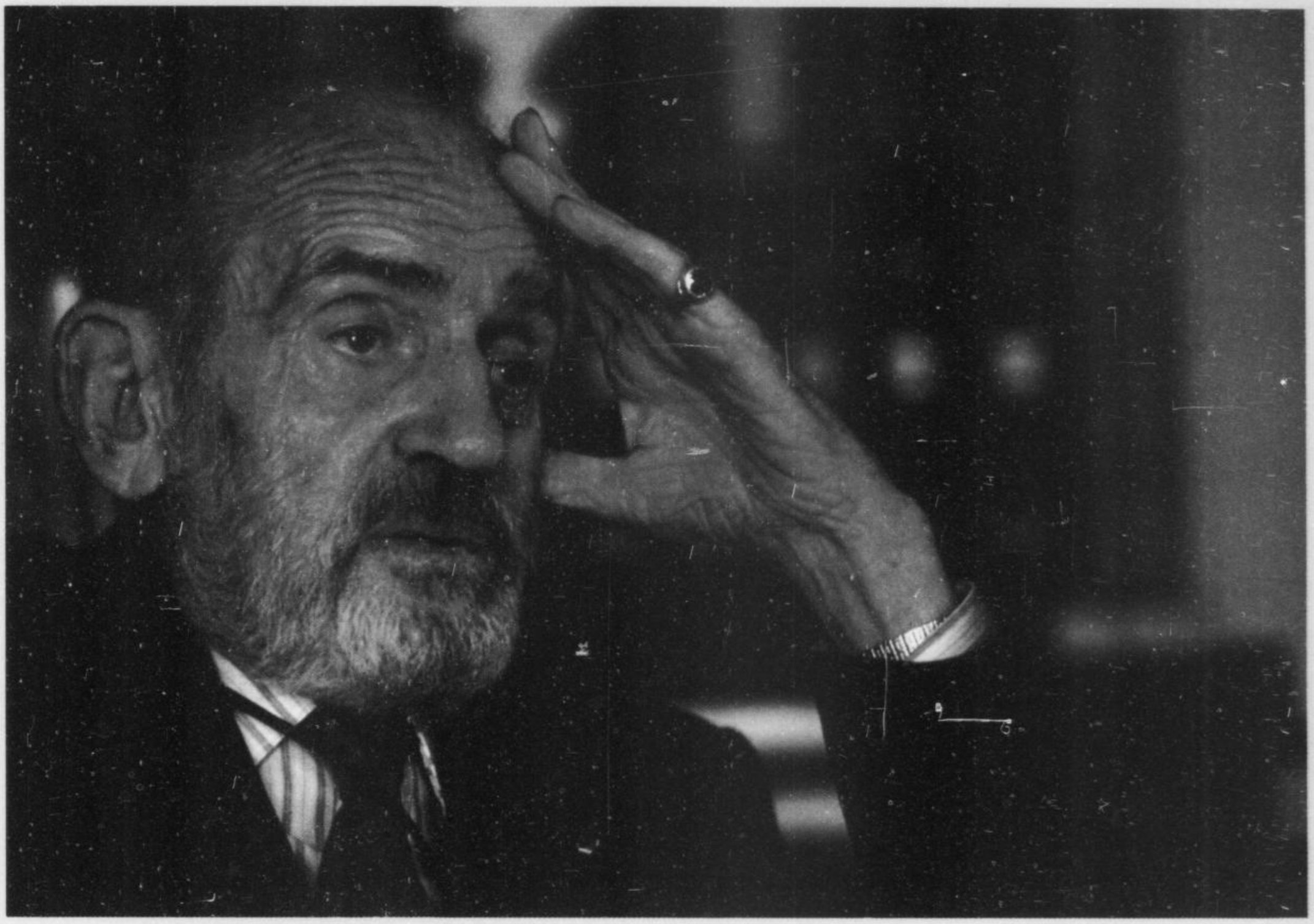
■ *You are famous for your travels through the desert by camel, but you began your scientific career as a student of marine species. What was your real vocation?*

—The important decisions in life are usually made by chance. I joined the Muséum as an assistant in a department concerned with "Fish and colonial productions of animal origin". The staff were required to travel in the then French colonies, and in 1922 I was sent to Mauritania to study, not the desert, but the coast and fishing. Instead of returning to Bordeaux by ship at the end of my stay, which lasted almost a year, I took a camel and crossed the whole of western Mauritania as far as Senegal. The conditions were somewhat arduous, since I was poorly equipped and quite inexperienced. But that did not turn me against the desert, and in 1934 I went on another big expedition into the western Sahara. Then in 1938 I was appointed head of the French Institute for Black Africa (IFAN) in Dakar, where the desert was right on my doorstep.

I started out studying fish and I still work as a zoologist. Right now I am trying to finish a study I began forty years ago on the skull of the parrot-fish, whose buccopharyngeal anatomy is highly distinctive. I have also spent part of my life studying the marvellous world of crustaceans. In 1924 I discovered a group so unique that no-one had even suspected their existence, the *Thermosbaenacea*, the first example of which had been identified in a Roman bath in Tunisia. I managed to organize my activities so as to specialize in these two areas, while continuing to pursue my interests in desert regions.

■ *Was it a taste for adventure that took you on your expeditions to Mauritania and elsewhere? Was there a scientific or spiritual link between your passion for the sea and your passion for the desert?*

—My curiosity is insatiable. If I go to the Sahara, or if I dissect the skulls of fish, it is



to try to understand, to add a little more to human knowledge. That is the mission of the researcher. No, it's not a matter of adventure but of research, of making precise observations intended to add a little to the volume of existing knowledge. Rejection of ignorance, the desire to know and to explain are, I think, the honour and glory of the human mind.

Sometimes—and it's no bad thing—there is also an attraction for a certain kind of life. The life of the sailor and that of the camel-driver have several points in common—in the sense that they both experience intense freedom and solitude in the midst of extreme heat or cold. . . . Life in the desert demands a strategy for survival, for plants, animals and man. The true Saharan nomads are an ecological success just as the Inuit of Baffin Island are. They are people who live on the outer edge of the Earth's habitable region and they are admirably adapted to life in their territory—which they think is the finest land in the world. They know all there is to know about its resources. For the camel-drivers of the Sahara, each plant has a use, as a medicine or a source of food.

■ ***In the modern world is there a future for the knowledge, traditions and ways of life of desert people?***

—The nomads are today threatened by a number of new factors. Several of the economic pillars of nomadism have collapsed. The razzia, for example, as it was practised in the past, as raiding for booty, not for the pleasure of going off to kill or be killed (on the contrary there was as little killing as possible). You went to a Sudanese village, stole camels and children to be your slaves, then returned home and shared the proceeds—if there were any, for some of these expeditions ended very badly. You could also invest in a big raid, become a kind of shareholder in it, just as the ladies of Versailles did in eighteenth-century corsair expeditions. It was all perfectly legal and highly structured.

Razzias came to an end with the nineteenth century. There were also the tolls that had to be paid in the days of trans-Saharan trade. Caravans of thousands of camels plied through the desert from Morocco to Timbuktu, In-Salah, Ghadamès and Tripoli, carrying salt, gold dust, a few animal skins, a little gum arabic. They

The desire to know and to explain are, I think, the honour and glory of the human mind.

would have to cross land claimed by such and such a tribe, and to get through they would have to leave something behind en route. Not money, for they had no money, but a share of what they were carrying. Today only trucks make these journeys.

Then states came into the picture. Today the nomads live on the territory of modern states, and generally speaking centralized government is not very keen on them. For the bureaucrats a free man ought not to exist. What's to be done with him? Get him to settle down in one place, either of his own accord or by force, or else destroy him. Many nomads have become rebels after violent clashes. But negotiations are taking place, moves towards solutions are afoot. The ideal would be to grant the nomads a considerable degree of regional autonomy, give them a say in matters that concern them, make sure that they are governed by people from their own society who know all about their problems. It should be up to the nomads to decide their own future. If, as they certainly have the right to do, they want to conserve their historical, cultural or linguistic autonomy—since the Tuareg have a language and even a script of their own—they will have to find financial resources. Because even in the Sahara people have to pay taxes, whether they like it or not. And while it is possible to live *in* the Sahara, it is impossible to live simply *from* what the Sahara provides. The nomad needs to go to a shop from time to time just as the sailor needs to reach port. To buy cloth, for example. It is a long time since nomads wore animal skins, although I have seen slaves' dresses made of goatskin.

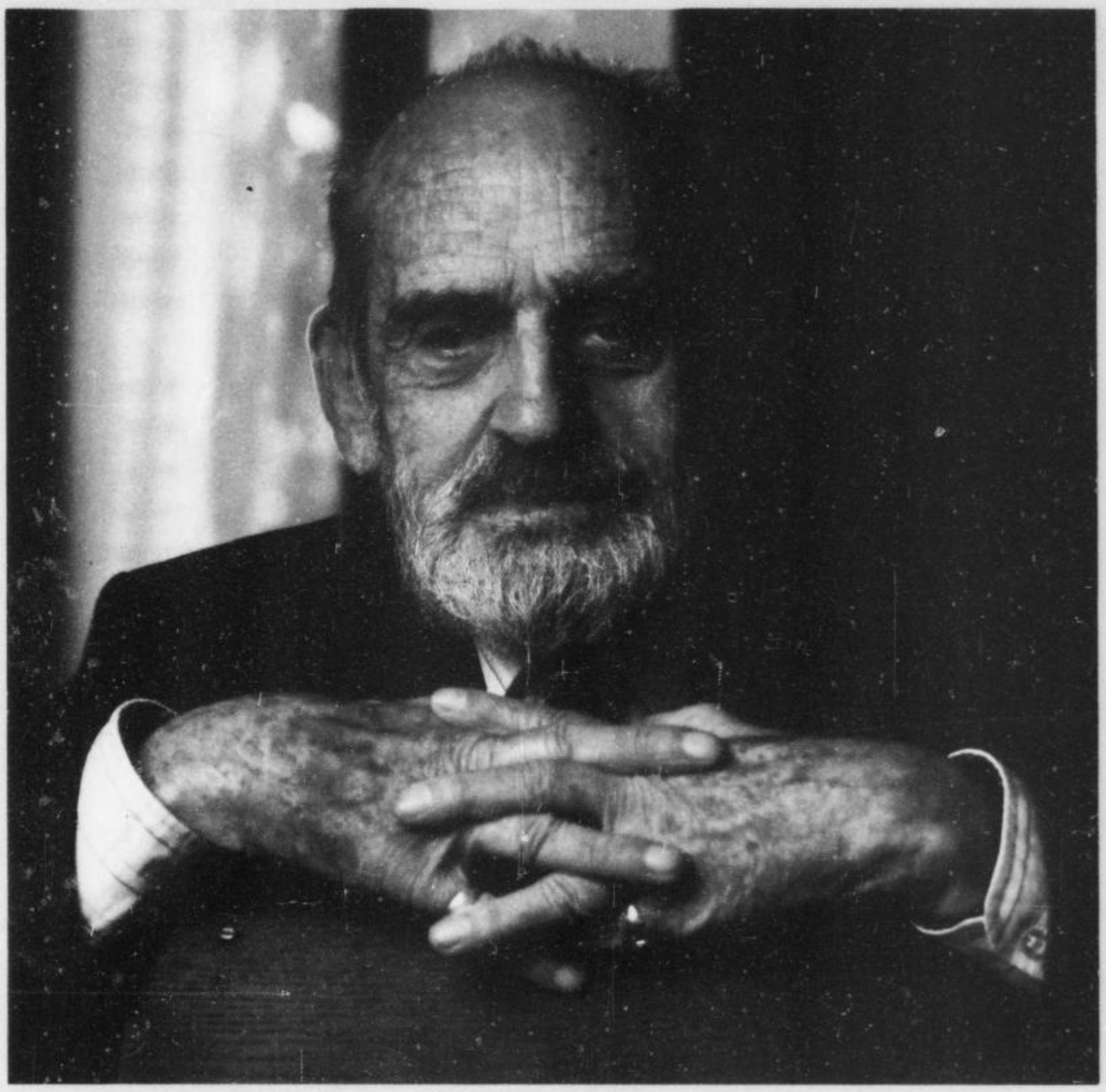
■ ***Do slaves still exist?***

—In large numbers. There are tens of thousands of them. Of course no-one uses the word "slave" any more, you find euphemisms such as "servants". Many are needed, to draw water from the wells, for example, above all in summer. Since the razzia has ceased to exist no new slaves are taken, but slaves marry and their children belong to their masters. Some have sought and obtained their emancipation, as they have the legal right to do. But it's not as simple as that. It's all very well to free a slave, but then you've got to provide him with a livelihood. His status as a slave gives him the right to certain things: his master is under the obligation to feed him, to provide him with clothing from time to time, a pair of sandals. . . . A kind of profit-sharing system should be invented, whereby the former slave would have a share in the increase of the herd. It's bound to happen. These are old ways that take a long time to die out.

■ ***You were director of the French Institute for Black Africa for twenty-five years and you made certain choices regarding the direction of scientific research. Did you favour basic or applied research?***

—When I arrived in West Africa, applied research was already well organized. Agronomic, geological, medical, veterinary and other forms of research were all going on, and there was no question of IFAN taking the place of existing research centres. My ambition was to model IFAN to some extent on the Muséum in Paris, in other words to choose a certain number of disciplines and establish departments for them. But with something more. IFAN had two wings, the human sciences and the natural sciences. Between the two there was a geography section which in my opinion acted as a very useful bridge because the work of the human sciences and—why not?—that of the natural sciences, often took the form of maps that geographers could prepare and process.

It was particularly important to start doing basic research because there were no universities in those days. I was involved in the creation of West African universities and for two years I was dean of the faculty of sciences at Dakar. Now there are many universities and a wide range of research is carried out in them, often in basic science. There's plenty of work waiting to be done in Africa. The distances are colossal and fieldwork is not always easy, but the main thing is to get things going and to see that



they continue. IFAN still exists; it has financial problems of course; its publications come out a little late, but they do still come out.

■ ***So you're not one of those who thinks that basic research is a luxury for developing countries, and that these countries should concentrate on more "profitable" research?***

—No, I'm not. Basic research is part of the activity of the human mind, and is needed in a modern country. When the former colonies became states, they had to acquire the attributes of a modern state. Museums, for example. In the past there were no museums in Africa. Now all the big countries have them, and perhaps I played some small part in the process. Museums are important. Some sciences, such as archaeology, seem remote from current preoccupations. Yet archaeology is one of the foundations of any nation's history. People need to connect with something in their past, even the very distant past.

For example, here's a hand axe I found in the Libyan desert, in a valley between sand dunes. As you can see, the upper side is shiny; it has been polished by the wind and the sand. But the other side is dull. That means the axe can't have been moved, because if it had been turned over it would be polished on both sides. This hand axe was fashioned by someone in palaeolithic times who used it to cut up an antelope, maybe, and then threw it away because it was of no further use to him. Three years ago someone else picked it up, and that person was me. How many years passed between those two actions? A hundred thousand at least! That's just a flash, a nanosecond, in the history of the Earth, but we are impressed by it, because we are ephemeral insects and it is very hard for us to imagine the passing of any length of time. Lamarck said that "Everything becomes possible with time". Even unpredictable, incredible things come about given time. The microfossils that I am currently collecting in Mauritania are found in rocks estimated to be 800 million years old. That's quite a while ago, but it's still not the time when life began on Earth, which was even earlier. But it is an important stage in the evolution of living cells.

■ ***Your passion for knowledge is boundless, like that of the eighteenth-century Encyclopaedists. But we live in an age of specialization.***

—I'm a naturalist, in the old-fashioned sense of the term. I think it's a terrible pity that basic sciences such as zoology and botany should disappear from the universities and from academic life. I don't think that it serves the cause of knowledge. If you want to be a molecular biologist, it's a good idea to know what you're talking about, to know what species or organism you are studying. What's more, the inventory of the world's flora and fauna is far from complete. We know all the big animals now. We are not going to find a new okapi or giraffe, although we do come across a hitherto unknown cetacean from time to time. But thousands of small species—insects, for

example—are discovered every year, and there's still a long way to go. We're making extraordinary discoveries by studying environments that were inaccessible fifty years ago: creatures living in the soil, cave-dwelling fauna, interstitial fauna living between grains of sand on the seabed. . . .

■ ***Perhaps we hear so much about molecular biology and biotechnology because we expect them to have economic consequences.***

—I have nothing against molecular biology as such. I just wish people would stop dividing the sciences into those that deserve to receive funding and those that can be abandoned. We need molecular biology; it has extraordinary possibilities. But we also need to know about animal and plant species, their anatomy, their morphology, their way of life. Who knows which plants in the forests we're busy destroying may produce effective remedies for some sickness or endemic disease? Let's not give up natural history, in the strict sense of the term.

■ ***Maybe the first thing that should be done is to protect the natural environment while there is still time—especially in arid regions which seem to be particularly fragile.***

—I couldn't agree more. We have to make a distinction here between the Sahara, the real desert where there are few people and where nomads simply move on when an area has been overgrazed, leaving the vegetation time to grow again, and savannah areas like the Sahel where there are too many people and above all too much livestock. Veterinarians understand the situation very well; they can calculate how many kilos of beef, mutton or goat can be raised on a given piece of land without the risk of overgrazing that is harmful both for plant life and for the animals, which no longer have enough food to live on and eventually die from lack of nourishment. What can be done about the Sahel, then, where there's no hay, where no grazing land is set aside and people go on living as they always have? It's very hard to get people who are used to following old traditions to accept new forms of organization and land use.

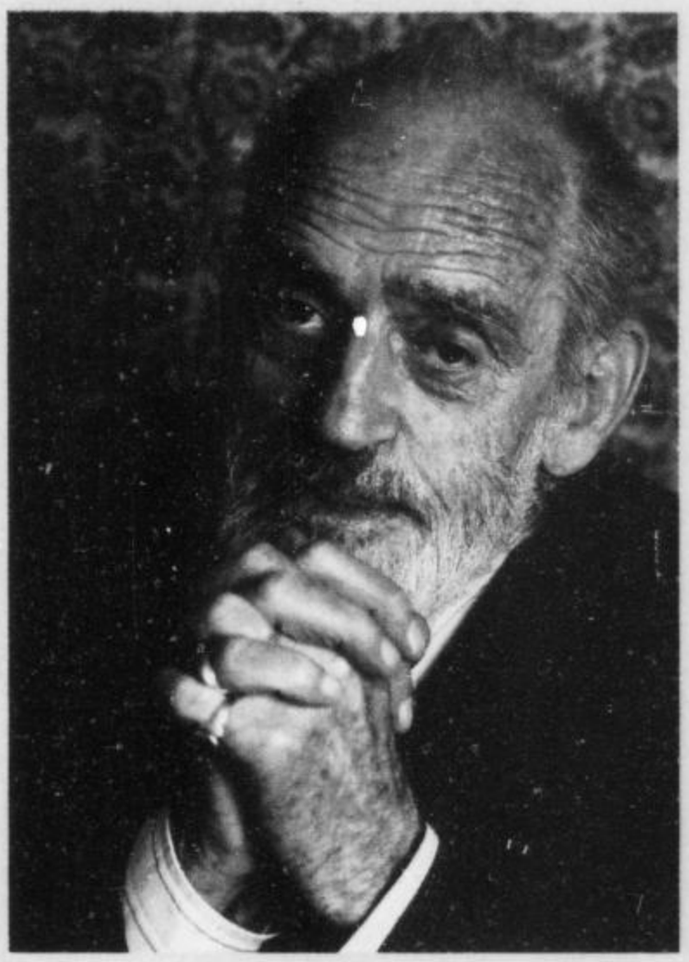
The fact is, however, that it's impossible to draw a boundary between arid, semi-arid, predesert and extreme desert zones. Nature is a continuum. We are the people who put up barriers, dividing it up according to the degree of aridity or climatic differences so that we can talk about it more clearly. The universe is one and indivisible, so let's take a global view of it. I believe in the idea of cosmic unity, and consequently of solidarity between living things.

■ ***You fight for human rights as well as the protection of the environment.***

—Absolutely. It's the same struggle. People are part of Nature just like other living creatures. But they do things that other animals wouldn't dare to do. I never use the word "bestial", in the sense in which newspapers employ it when they describe a "bestial" crime. It's totally inaccurate; animals don't behave like that! We should say "a human crime", but it seems that the word "human" isn't pejorative. And yet human beings are the only animals that have schools to teach their young to kill

Deserts stir our emotions because they represent Nature as it was before human beings came on the scene. They also show us what it may be like after we have disappeared.

one another. It's monstrous! Lions aren't crazy, they don't teach their cubs to kill other lions, they teach them to kill gazelles or zebras. Personally I'd prefer lions to be vegetarian, but I wasn't consulted—a great pity, since I could have given some excellent advice! The future of humanity will be jeopardized as long as we love violence, cruelty and war. This *homo* we call *sapiens* may not last very long. Deserts stir our emotions because they represent Nature as it was before human beings came on the scene. They also show us what it may be like after we have disappeared. Nature will survive. Fortunately, it has a future, but we won't have much of one if we go on behaving rashly.



■ ***Do you find a spiritual dimension in the desert?***

—No more than anywhere else. Spirituality is found in cities just as much as in deserts. It's true that the desert encourages meditation, because you have to pass the time. The desert can be terribly boring. A day spent on camelback is deadly dull. You can't read, you do four kilometres an hour and you have to ride for ten hours a day. That's a long time. You're very happy to stop in the evening. On the other hand there's the silence, the simplicity, the frugality. There are some things one can learn from the desert, but they don't directly relate to what people mean by spirituality in the religious sense.

The desert offers protection against certain dangers. In the early days of Christianity it was where monastic life began, in its eremitical form. People went there to get away from the moral dangers of the cities, to take refuge in a place where they could devote themselves to meditation, prayer and an ascetic life. But I'm not sure that it creates religious feeling.

Even so, it's beautiful and it's clean! The desert doesn't lie; everything is there for you to see. There's even something shameless about it: the earth is naked. The sand covers it in places, but apart from that its skeleton can be seen wherever you look. It's a paradise for geologists. Rocks can be seen from far away; you know where you're going; you can decide exactly where you're going to take your samples tomorrow. The scale is grandiose. The dunes are immense—some of them are 200 metres high—and their colours and shapes are extraordinary. They are waves created by the wind, like sea-waves except that they last much longer; some of them date back to the New Stone Age or earlier. The superstructures move, but we don't always see it happen. To appreciate the movement of dunes you need to come back in a thousand years' time, which we can't do—and the people who will be there a thousand years from now won't have seen them as they are today. We need to think in terms of long periods of time, and that is something we find very difficult. ■

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The dry lands

These limestone formations in Nambung National Park, north of Perth (Australia), formed around the roots of plants that grew there in sand some 30,000 years ago. When the plant cover died, the dunes shifted, leaving these curious pillars exposed.

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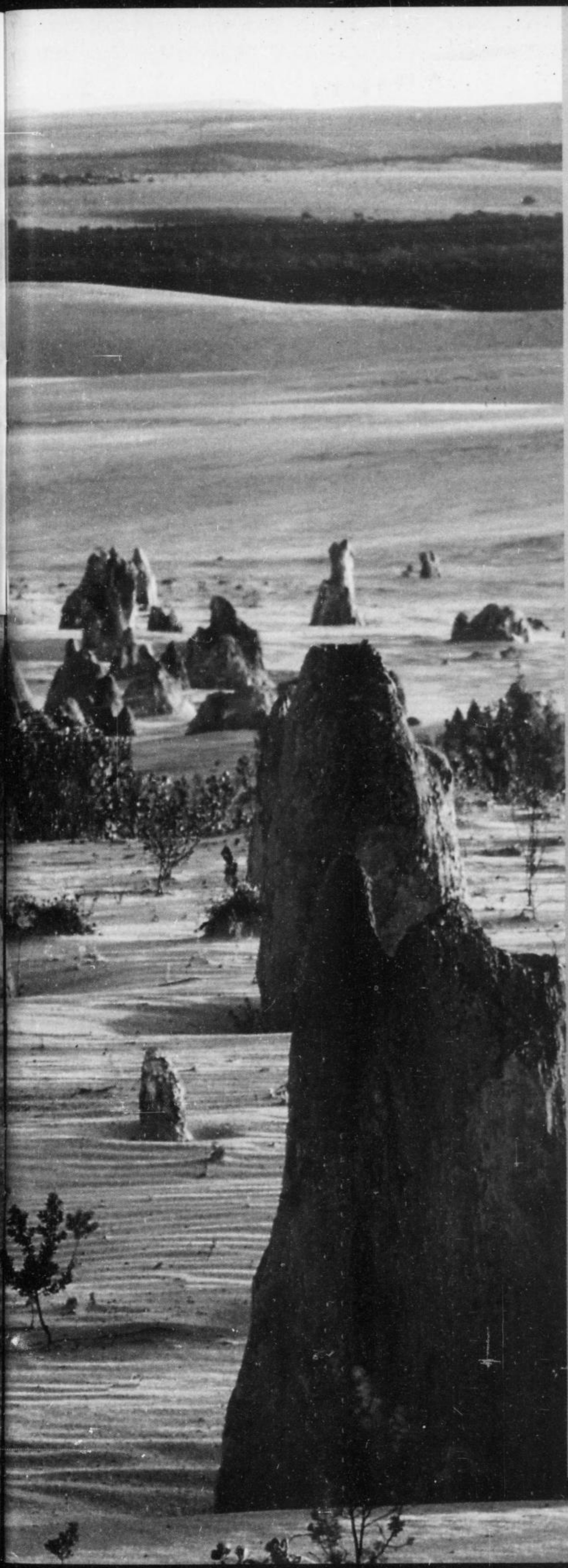

IN most people's minds the term *desert* conjures up an image of undulating sand dunes beneath the hot sun. There are, however, many other kinds of desert. Antarctica, Greenland and the polar ice packs are cold deserts where where the water is locked up in ice. As for the Earth's arid regions, they exist both in areas such as Arabia where the climate is permanently hot, and in others such as the steppes of central Asia where the winters are cold. The common denominator between them is that on average more water evaporates than falls as rain, and life has to adapt to the deficit.

Where there is practically no rain, as in the Sahara and the Gobi, there is virtually no life. The only exceptions to this rule are places where irrigation water can be drawn from rivers (as in Egypt, Iraq and the Indus region, all of which saw the birth of great "hydraulic civilizations"), or from underground "fossil" reserves that can be exploited for a limited time, as is currently happening in Libya. Regions in which enough water falls to allow grazing and perhaps some dry farming are described as semi-arid. There are many of these in Africa, India, Argentina and Australia.

Arid and semi-arid regions make up more than a third of the world's land surface, whereas cultivated land accounts only for one-tenth. They are concentrated in two zones straddling the Tropics of Cancer and Capricorn, on each side of the Equator. The main cause of aridity is to be found in the circulation of the atmosphere above our revolving globe. The almost permanent ridges of high pressure that predominate around the 30°-latitude mark stop rain from forming. Great distance from the oceans or the presence of mountain barriers are other factors that contribute to the aridity of regions like central Asia or the American Midwest.

So deserts have not been created by humankind, as is sometimes claimed, though people do contribute to desertification. In our time increased population pressure and over-intensive agriculture and grazing are accelerating soil degradation and worsening the effects of drought in semi-arid regions such as the African Sahel and north-eastern Brazil.

There is another way in which human activity may affect the evolution of arid regions. It is thought that the accumulation in the atmosphere of carbon dioxide from automobile engines, heating or industry and other gases of industrial and agricultural origin can lead to global warming through the "greenhouse effect". It is not yet possible to predict the consequences of such global warming for different regions, but it may well be that in a few decades some arid regions will be drier still while others will be less so. In that case, people will have brought about a significant climatic change, comparable to those that have taken place in the course of geological history.

MICHEL BATISSE ■

Ascetics have always been drawn to life in the desert, far from the world and the pleasures of the flesh. Some of them became a prey to strange forces and malign spirits…

THE CALL OF THE WILDERNESS

by Jean-Claude Carrière

THREE calls come from the desert. The first is the call of God, who manifests himself in the wilderness, as he did to Moses. It is in the desert—or so the early Christians believed—that we can really make contact with the other, supernatural, transcendent world. It is there that the essential word can be heard.

The second call is one of disgust and contempt for the world and for a corrupt, condemned society in which God's presence is obliterated by commerce, by the family and by a thousand and one mundane, pernicious desires. In contrast, the solitude and aridity of the desert seem pure, unsullied. Ironically, despite the lack of vegetation, the desert is where the last traces of paradise can be found.

The third call is sounded by the trumpets of the apocalypse. During the early centuries of the Church, the founding fathers of Christianity were certain that the end of the world was nigh. At any moment the heavens might split asunder and exterminating angels with flashing swords surge forth. When that terrible vision came to pass, woe betide those caught in a state of sin or even of forgetfulness; they would be hurled forever into Gehenna. When the end of the world comes, we should be in a state of retreat and prayer, as near to God as possible. That is why the desert is there.

A hotbed of temptation

Early in the Christian era, many people were drawn by these three calls to arid lands, in Syria but above all in the Thebaid, the desert around Thebes in Egypt. They soon became legendary figures. The most famous of them was St. Anthony, who lived in Egypt to the age of a hundred and five. His experiences showed that if the desert is a sacred place it is also a hotbed of temptation where the devil and evil forces can rise up in the form of strange, whirling shapes ready to drag into the abyss anyone bold enough to turn his back on worldly comforts and the reassuring relationships of social life.

This ardent, perilous life in a remote place and in absolute poverty—a practice that Luther and the Protestants would later denounce as stultifying—gave rise to extreme forms of behaviour that appear extraordinary to us today. The desert teems with images that came to obsess these holy men, driving them to the brink of madness and even beyond: it is a land of wonders and hallucinations because of the burning sun; its aridity is an allegory of the soul's separation from God; it is a powerful symbol of unity; sand and wind are symbolic elements inseparable from the

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The fortified Monastery of St. Catherine in the Sinai Peninsula (Egypt), one of the cradles of Christian monasticism in the Orient.

eternal theme of the vanity of all things, while rock symbolizes permanence; baptism is performed with the water of life, all the more precious in the desert because of its scarcity; it is the haunt of tireless, aggressive, wandering demons, seemingly stirred by the hermits' asceticism and self-denial. The Church kept these men at arm's length, sometimes pointing out that they were not following the example set by Christ, who had chosen to live and die among people. Nevertheless, a multitude of *Lives of the Desert Fathers* related their exploits in great detail.

It is no exaggeration to talk of physical exploits or even of competitions or championships, for the desert fathers strove to outdo each other in fasting and praying. Some hid their faces, others flagellated and mortified themselves. St. Macarius the Egyptian remained standing "for sixty years", from time to time running through the desert carrying a heavy basket of sand. When asked what he was doing, he replied, "I am tormenting him who torments me".

St. Paul the Hermit, who recited 300 prayers a day (he counted them with pebbles), was "humiliated" when he learned that a virgin in a neighbouring village recited 700. St. Elpid, who lived near Jericho in the fourth century, never faced the west and never looked at the sky after six in the evening—for reasons known to him alone. Others lived covered with chains, surrounded by sharpened branches or wearing strange helmets from which stones that kept them from falling asleep were suspended (because God may come "like a thief in the night"). They never washed, out of scorn for the flesh. Live maggots crawled from the mouth of a Greek ascetic named Matthew. The hermit Meletius was covered with running sores, and

whenever a maggot fell out of one he carefully put it back so that it would not suffer.

Perhaps the most extraordinary of all were the stylites, who lived on top of pillars in order to be closer to heaven. According to legend, St. Simeon Stylites, the best known among them, stayed on a column for over forty years. He inspired a poem by Tennyson and Luis Buñuel's film *Simon of the Desert* (1965).

Simeon ate nothing but a few blades of grass hauled up to him in a basket attached to a rope; his excrement was black pellets. He had numerous visitors, and several rulers even sought his advice, bearing gifts, which he refused. On one occasion, he thought he saw an angel of light swoop down in a chariot of fire to take him to heaven, but just as he raised his foot to climb in, the vision faded. As a punishment he condemned himself to stand on one foot for the rest of his life. (He died a year later.)

The flesh is weak

In this desert that was both a challenge to them and an arena for their feats of endurance, the hermits seem to have been possessed by a terror of women. They took drastic steps, even going so far as self-mutilation, to combat this fear. One desert father saw a woman's footprint in the sand and immediately caused it to disappear. Another, on a journey with his aged mother, wrapped his hands in several layers of cloth before carrying her across a stream, thus avoiding contact with dangerous flesh.

There are many stories about hermits who tamed and domesticated wild animals (some spoke the language of crocodiles, another trained a bear to take sheep to pasture at certain fixed times), but women, even holy women, evoked feelings of horror and panic. St. Martinian, from Caesarea in Palestine, inflicted serious burns on his feet to resist the blandishments of a young woman who had tried to seduce him. As soon as his wounds were healed, he retired to a rock in the middle of the sea—a desert of another kind. One day a ship ran aground on the rock and was smashed to pieces. The sole survivor was a young woman who cried out for help as she clung to a piece of wreckage. St. Martinian took her onto his rock but then jumped into the sea to get away from her. With the help of God and the currents, he safely reached the shore.

Women who went into desert seclusion were faced with similar pitfalls. Apollinaria, daughter of the Emperor Anthemius, had herself disfigured by mosquitos in a swamp before withdrawing to the Thebaid; she did not want the other hermits there to find her attractive.

Some did give way to desire. After a long stay in the desert, a certain Herion went home to Alexandria, where he devoted himself to night life and horse-racing and took up with a dancer. God, however, had not abandoned him, and the chronicles recount how the Lord saved Herion from debauchery by "making a tumour grow on his glans".

A multitude of hermits

The silence of heaven can be as relentless in the desert as anywhere else, and some hermits gave up. Others followed their vow unswervingly, experiencing hallucinations or madness. Fanatics sometimes formed gangs armed with thorny sticks, killed all those they believed to be impious and even invaded the cities. In 415 a blameless Alexandrian Neoplatonist philosopher, Hypatia, was murdered and her body torn apart by a horde of Christians.

In the desert some ascetics encountered the

The erg, or sand sea, of Admer in the Algerian Sahara.

Preaching in the desert as illustrated in an early-16th-century fresco in the chapel of St. Anthony at Clans in the south of France. St. Anthony (251-356), the patron saint of hermits, founded the first Christian monasteries in the deserts of the Thebaid in Egypt.

crowds they were trying to escape. Near the Thebaid town of Oxyrhynchos, there was said to be a "prodigious multitude of hermits"—apparently more than 10,000, plus 20,000 virgins.

It was impossible for such large communities to live without laws, or at least without rules. The earliest organization of hermits into groups, the earliest attempts at communal life and the earliest monastic codes grew out of the need to cope with spiritual and physical dangers and to create a new *order*. The Essene sect is generally considered to be the first of these movements in the West.

The first monasteries and convents were founded in the Thebaid and in Syria in the fifth century. The word "monk" comes from the Greek word for "alone", but no member of an order lives in seclusion. Indeed, communal living is part of the definition of monastic life.

Monasteries left the wilderness and settled near to and in cities fairly early on, for the desert of stone and sand had proved incapable of healing the desert of the soul. Other weapons and an inner cure are needed. The Church came back to the world, which in the meantime had not been consumed by heavenly flames. The desert experience did, however, leave traces in mystical fervour (the self alone with God) and in the need to get on with others. These traces were born of the calls that were heard, of the silence of heaven, of the impossibility of solitude, of a hard, dry life, of a world not really lost, of the troublesome devil that one always finds within oneself, and, most of all, of the human fabric—tough and tender, ruthless and yielding—that neither wind nor sand can tame.

A PLACE OF TRIALS

■ by Mahin Tajadod ■

THE Persian mystic tradition compares the spiritual quest to the crossing of desert valleys. Sufism enumerates seven of these valleys: quest, love, knowledge, detachment, unity, amazement and annihilation. The path is perilous. Asceticism to purify the soul; the disavowal of carnal passions; the renunciation of earthly desires—all these thorns wait on the mystic's path.

Gold, the possession of goods that flatter the eye and the heart and stir envy and desire—all the world's vanities—appear as mirages in the path of the thirsty voyager.

Every caravan needs a guide to cross the desert; no-one would be so foolish as to venture across the sandy wastes without someone to lead them. Similarly, the Iranian mystic tradition requires seekers after truth to seek the help of *pirs*, masters who can show them the way. No disciple would risk setting out on the path of devotion without the help of an initiator to instruct him and pass on the necessary knowl-

In Persian literature the desert is peopled by mystics, visionaries, mythical beings and travellers who have lost their way

Above: the Simurgh, a mythological bird, and Zala, the human it adopted, as shown in a 15th-century illustration from the *Shah-nameh* ("The Book of Kings"). Right: a dervish pictured in a detail from a 16th-century illustrated version of the *Shah-nameh*.

edge. Like a caravan-leader who holds a camel by the reins to steer the beast and its rider through dangerous passages, the spiritual master takes in hand the chain of the proselyte's instruction.

Attâr, the great twelfth-century Persian poet, describes in *The Conference of the Birds* a journey these creatures make when they decide one day to set off in search of their king. Guided by the hoopoe, a bird rich in mythological associations that was Solomon's companion and that knows how to avoid mirages and espy waterholes from afar, they set off for the mountain called Qâf, home of the Simurgh, ruler of the birds. Many of the travellers cannot stand the heat, the hunger and thirst and, fearing the unknown, prefer to return to pleasanter lands. Others have the courage to endure the journey and its perils. For want of food, water and shade many die en route. Only thirty birds—in Persian, *si-murgh*—reach their goal, flying over Qâf and meeting the object of their quest in a mystic communion.

"And so those thirty birds contemplated the face of Simurgh in the reflection of their own faces. . . . They saw that it was truly the Simurgh, and if they turned their regard on themselves, they saw that they were the Simurgh too. Finally, looking one way then the other, they realized that they and the Simurgh were in reality one."

Ogres and fairies

In Persian legends and poetic epics, the desert is also the land of ogres, genies and fairies. In his *Incantation of the Simurgh*, the twelfth-century Iranian philosopher Suhravardi explains how to avoid the ogres known as *douâl-pa* that leaped onto travellers' shoulders and would not come down until they had strangled them with their legs. "As the traveller passes, the *douâl-pa* suddenly throws out its legs and grips him around the throat, so hindering his progress that he can no longer find the Water of Life. But I have heard it said that a man can be delivered if he goes aboard Noah's Ark and takes in his hand the staff of Moses."

The genies known as *djinn* also inhabit the desert: they can be recognized by the clogs they wear, and they are less dangerous than ogres or

demons. Peris, fairylike creatures who are the personification of beauty and grace, only appear after nightfall. The story goes that Nasir ad-Din Shah, who ruled Persia from 1848 to 1896, used to dress carefully every evening, then set off on his favourite horse to the desert to meet the most beautiful of these fairies.

Whether the flesh is forgotten or the mind becomes doubly sensitive to its prickings, whether the spirit grows drowsy or gains in lucidity, the desert is first and foremost a mirror in which one can see the world and maybe also glimpse the face of God. The only certainty is that sooner or later you will see yourself. ■

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A PAINTER'S PARADISE

by Mona Zaalouk

The desert's abrupt changes of colour, light and mood cast a powerful spell on artists

THE desert is a mysterious and disturbing presence. Beneath its endless surface a world of profusion is waiting to reveal itself to those who take time to observe, wonder and understand.

The traveller eager for sensations feels dwarfed by the surrounding immensity until the grandeur of the landscapes starts to filter through. Enveloped in the sensual softness of sand-dunes like intertwined bodies that the changing light of the day and of the seasons paints grey and white, ochre and beige, one is tempted to recline and rest for a moment before moving on to other colours, other shapes. Keen as blades cutting through space, the harshness of their rocky features softened by pink or violet, lunar reliefs whose silhouettes recall those of people or animals line the horizon with visions in which the real and the imaginary are one.

Men pass like ghosts. Where do they come from? Where are they going?

They are the blue men, the lords of the Sahara, wreathed in mystery, dignified, simple people stripped of everything superfluous by their nomadic wanderings from oasis to oasis. These austere Tuareg in their flowing indigo robes, their heads covered with a black or white *chech*, are the personification of grace and majesty. The women go unveiled, decked out with jewels and shimmering fabrics. Other customs, other contrasts are found among the bedouin of Egypt: the men wear bright colours, while the women sport vivid embroideries on their long black robes. The Peul of the Sahel, a handsome people, are also wonderful colourists: their costumes, jewels and made-up faces create a dazzling tableau.

Leaving behind village, oasis or encampment for a landscape of overwhelming immensity, one is transported by the play of light and shadow to another world, one in which dreams are as accessible as mirages. This idyllic vision is suddenly disrupted by a furious sandstorm, describing its crazy, whirling dance against a background of the subtlest shades of ochre. This terrifying picture is followed by a sunset that celebrates the end of the day by setting the horizon alight with sheets of red and orange. Evening falls, and one goes on one's way beneath the stars that light thousands of sparks in the dark night. The full moon lights up the desert's silent vibration.

A village on the edge of the Sahara in Niger.

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***Desert Rituals* (1993) by Mona Zaalouk.**

In its contrasts and its changes, its airiness and its torpor, its rhythms and its silence, its overwhelming grandeur and its sensual delight, the desert sums up life's essentials. But how can anyone capture on canvas its atmosphere, its starkness? Poets describe the impressions and emotions of a desert journey better than the lines and colours of the artist. Delacroix managed to evoke them in a figurative manner; but during his stay in North Africa his works became more modern in style, prefiguring abstract art. Later Paul Klee, in his Tunisian period, learned how to catch the desert's spiritual dimension in a brush-stroke and a flash of colour.

The opacity of the rocky outcrops, the sense of lightness and movement, the evanescent sense of freedom make the desert a magnet for the painter. After a first glance, everything in it becomes a unity, traversed by a line around which sky, earth and people melt into an indivisible whole. The desert embodies the artist's ultimate dream of striving to synthesize the visible and the invisible, the figurative and the abstract, matter and light. ■

A DRY, WHITE ODOUR

. . . .The desert: now awakened from its dream, and we have all left the Ark of this dream. As one man.

But I am already waiting for the night to return. The same night, if possible. To hear the song of man and to reconcile myself, the shadow, with him who casts it.

The night will return. I am a prisoner of all the rest.

A prisoner captured by the desert, guarded by it inasmuch as we all are desert, all of us. In the very obscurity of our flesh.

I feel myself invaded by its dry, white odour to the depths of my being. Desert of deserts. Dust of dust. Silence of silences. Maybe we have won and the world has lost. Perhaps the void has made its nest in you and you have become just anybody exposed to the four winds, with no substance or outer covering other than the void which can only become emptier and melt you in the blaze of day.

But if, burned by its touch, you extinguish yourself, then you will come back to the world, back to life. So, angel, pass over this body of mine. Consume it. Consume me

Mohammed Dib

Le désert sans détour (© Sindbad publishers, Paris 1992)

SCREENPLAYS IN THE SAND

by Mouny Berrah

The desert has played a dramatic role in the history of the cinema

BUSTER Keaton, his hands joined together as if in prayer, entreats a cow, with just the right combination of buffoonery and solemnity, to produce a drop of milk. In the background is the desert, criss-crossed with barbed wire. The film is *Go West*, the year 1925. The movies have not yet turned landscapes into myth, but in this scene the desert already represents both paradise lost and the urgent need to regain it.

In the early Westerns, the desert underscored feelings, echoed emotions, mirrored character and served as a background to the plot. All of these roles fuse in a single, classic shot in John Ford's *The Iron Horse* (1924). The foreground is sand. Madge Bellamy and George O'Brien stand face-to-face, holding hands. They are silhouetted against a stark, scrubby background stretching towards the horizon. Here the desert is already a part of the plot as well as a setting.

Above, Sonia Ichti, the heroine of *Les Baliseurs du désert* (1984), a film by the Tunisian director Nacer Khemir.

With the unfinished railroad slashing through it, the desert shapes the destiny of the hero in search of his father's killer.

A similar shot features in James Cruze's *The Covered Wagon* (1923). A wagon train wending its way through a dry, stony wasteland hemmed in by mountains looks pathetically vulnerable in the vast threatening wilderness. In both films the use of the desert as a strategic element lends an epic quality to what otherwise would have been mere adventure stories. In the history of the Western, the desert—and landscape in general—evolved from being simply a counterpoint to the theme into a narrative device, and finally, in two later John Ford classics, *The Searchers* (1956) and *Cheyenne Autumn* (1964), a character in its own right. In these films, however, the desert is usually portrayed in a conventional way. Its rocky wastes are associated with loneliness, danger, challenge, conquest and endurance—the qualities and imagery that give the Western its epic dimension.

A world of silence

The "Oriental" desert has different connotations in film. Josef von Sternberg's *Morocco* (1930) was one of a line of films such as *The Thief of Bagdad* and *L'Atlantide* that brought to the cinema the glamour, but also the stereotypes, of a triumphant orientalism. *Morocco*, dominated by the sublime Marlene Dietrich, tells the story of an on-and-off love affair during the colonial period, a time when fascination with the desert inspired films ranging from clichés to masterpieces. The cinema critic Mostefa Lacheraf has described his impressions of *Le Diamant Vert*, a now-lost film dating from that period. "Almost fifty years ago," he wrote, "to the best of my recollection, this fresco [with its cavalcades, caravans, bedouin splendour and crowds of extras] had the same impact on us, both as a revelation and as a coherent aesthetic experience, as the spectacle the French painter and writer Eugène Fromentin (1820-1876) witnessed with astonishment in 1853 at El Kantara, at the foot of the southern Aurès mountains, and which he described in his book *Un Eté dans le Sahara*." The desert shots in *Diamant Vert* were more akin to ethnographic description than to the exotic scenes that were common in the movies of the time.

Years later *Fort Saganne* (1984) featured an unusual treatment of the desert. The film is a faithful adaptation of a novel by Louis Gardel which describes the gradual development of the relationship between the characters and the sand, which shapes their destinies and determines their actions. In its depiction of the Sahara, *Fort Saganne* shows a rarely seen aspect of desert life—a lyricism that the "people of rocks and sand" experience with great intensity. The film is about conquest, army life and colonization, but in the course of the action the soldiers gradually go to pieces until they have nothing left but the lust for freedom that can sometimes kill more surely than an enemy bullet. The originality of the film lies in its treatment of the characters' difficult physical and, above all, psychological adaptation to the total freedom of the desert, where people used to city life must come to terms with a scale of values that has been turned upside down. They discover the futility of trying to master time and space in a constantly changing environment. The sand erodes everything except the memory of passions. Even speech becomes meaningless when the characters realize that the desert is a world where life is measured out in silence. In this respect the film is faithful to the novel, in which Gardel wrote: "What's the point of struggling to make an impression! What's the point of this mindless activity except to forget the obvious: that no act is justified by any cause; that time swallows everything; that the void always wins. In the Sahara, it has already won."

Arab visions

The experience of coming to terms with strange surroundings plays a less important role in the vision of the desert offered by Arab film-makers in works ranging from sugary melodrama to classics. *Fleurs Sauvages* ("Wild Flowers") by Youssef Francis is more like a photo-romance than a film, which gives it a certain representative quality. The setting is Egypt in the 1960s. It begins with a long sequence showing Hussein Fahmy and Nadia Lotfi driving through the desert in a car; there is neither dialogue nor

***Three Godfathers* (1948), a John Ford Western.**

A scene from *The Sheltering Sky*, made in 1991 by the Italian director Bernardo Bertolucci.

music. They stop twice, first at the El Alamein military cemetery, then at an oil well. There is no apparent reason for this trek, except, perhaps, fascination with the barren landscape, which takes a terrible toll in technical terms, since all the desert shots are overexposed.

Movie buffs enjoy *Fleurs Sauvages* for its over-the-top qualities. In other Arab films, such as Tewfik Salah's *Al Makhdu'un* ("The Deceived", 1971), the desert is a symbol. In this highly personal work based on a novel by the Palestinian writer Ghassan Kanafani, a group of young people who have paid a smuggler to take them across a border suffocate to death in the back of the tanker in which they are being transported. The desert also plays a prominent role in Chadi Abdessalam's *La momie* ("The Mummy", 1969) in which the plundering of a pharaoh's tomb serves as a metaphor for the fate of Egypt and Egyptian culture. Abdessalam's training as an

Glauber Rocha's *Deus e o diabo na terra do sol* ("Black God, White Devil"; 1964) was set in the *sertão*, the arid interior region of north-eastern Brazil.

architect is reflected in the way in which he lines up his shots. (He helped design the sets for Joseph Mankiewicz's *Cleopatra* and Jerzy Kawalerowicz's *Faraon*, both of which evoke the desert magnificently.) There are also metaphorical elements in the work of the Egyptian director Youssef Chahine, who often uses the desert to score a point. In a striking scene from *Adieu Bonaparte* (1985), for example, a tiny Napoleon is framed against the vast expanse he is turning his back on.

Arab films sometimes take an alternative view of the desert. *L'Ombre de la terre* ("The Shadow of the Earth", 1982), by the Tunisian director Tayeb Louhichi, challenges the idealized image of the desert found in tourist brochures. The desert in Louhichi's film, whose theme is poverty and the growing marginalization of nomad peoples, is not identified; it could be in any Arab country where the only connection between rulers and ruled is the identity card and military service.

Some films attempt to discover the desert which lies beneath appearances and conventions. One of them is *Les baliseurs du désert* (1984), in which director Nacer Khemir seeks to show the essential purity of the *Thousand and One Nights* behind the orientalist imagery that now surrounds it. But the desert can also be shown plainly for what it is: a waterless place. *Les assoiffées* (1973), by the Iraqi director Mohammed Choukri Jamil, describes the slow death of a village and the situation of its womenfolk.

Biblical epics

The desert has also been a backdrop for epics. From Cecil B. de Mille's *Cleopatra* in 1934 to Joseph Mankiewicz's version of the same story in 1963, the desert has risen to the occasion. Just as the American cinema's fascination with history conceals audacity beneath the spectacular, in epics the desert is sometimes used as a form of camouflage to divert attention from controversial material. From Hollywood to Cairo (Chahine's *Saladin*) and Algiers (Merzak Allouache's *Les aventures d'un héros*), the desert has sometimes succeeded in throwing sand in the censor's eyes.

Like the desert epics, films on Biblical themes such as William Wyler's *Ben Hur* (1959) and John Huston's *The Ten Commandments* (1956) and *The Bible* (1966), contain a historical message, although on a first viewing the religious aspect seems predominant. In these films, as in the Egyptian director Salah Abu Seif's *L'Aube de l'Islam* ("The Dawn of Islam", 1970), the desert is clearly a metaphor, a place where anything can happen, especially divine revelation. Besides providing part of humanity with its cultural heritage, the desert here becomes a character by virtue of the voices that are heard there, and the elements that are unleashed in it form part of the action. This is particularly noteworthy in Abu Seif's film: since Islam forbids any representation of the Prophet, sand takes the place of what cannot be shown.

In Italian cinema, Michelangelo Antonioni presents in *The Red Desert* (1964) and *Zabriskie Point* (1970) a unique vision of the desert as an expression of the anguish of incommunicability. Pasolini's desert is allegorical and forms part of his highly personal interpretation of Judaeo-Christian orthodoxy, leading up to the great modern myths that are the focus of *Teorema* (1969) and *The Thousand and One Nights* (1974). Brazil's Cinema Novo is inspired by the mythology of the *sertão*, the semi-arid zone of the country's northeastern region, a major literary theme that has inspired realist works such as Nelson Pereira Dos Santos's *Vidas secas* ("Dry Lives", 1963) as well as baroque films like Glauber Rocha's *Black God, White Devil* (1964) and *Antonio das Mortes* (1969). For Cinema Novo, the desert is primarily, to use Glauber Rocha's words, "a culture of hunger".

It can also be a place to discover the unknown, as in science fiction movies; a place where love dies, as in Bernardo Bertolucci's *The Sheltering Sky*; where heroes of the third kind can be encountered, as in *Indiana Jones*; or where power and loneliness go hand in hand, as in Kawalerowicz's *Faraon*. It can serve simply as a visual element or play a major part in the narrative structure. It can be found in all kinds of films. Roland Barthes once spoke of the "world's countless tales"; many of them take us to the desert. ■

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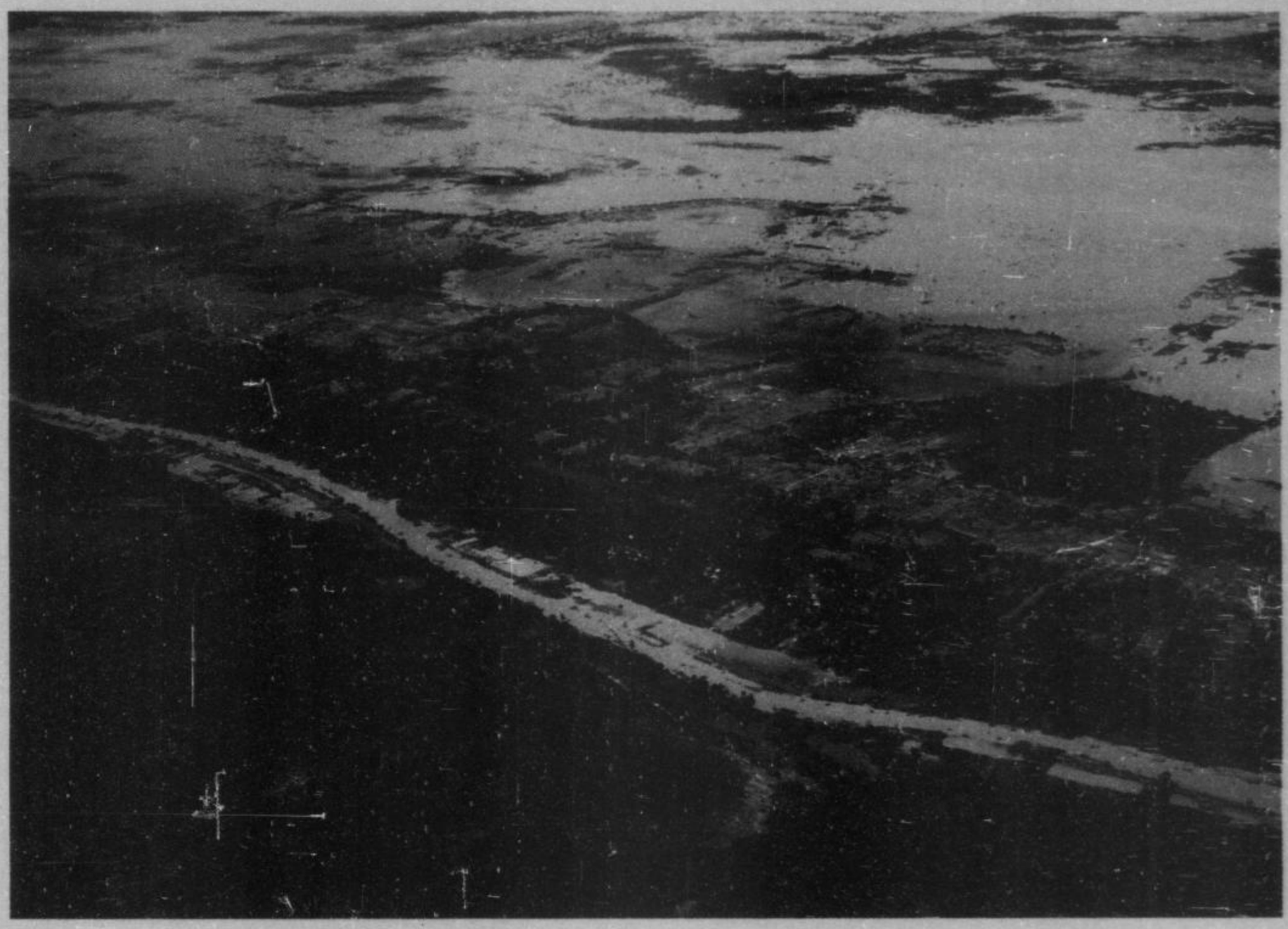


PROTECTING THE WORLD'S WETLANDS

BY FRANCE BEQUETTE

THE River Okavango flows for about 1,400 kilometres from its source in Angola (where it is known as the Cubango) before disappearing into the sands of the Kalahari Desert in Botswana, where it forms the world's largest inland delta. This vast marshy zone, 175 kilometres long and 180 wide at its furthest extent, is a natural wonder whose luxuriant, emerald-green vegetation covers almost 16,000 square kilometres.

The delta's shallow waters constitute Africa's largest oasis. The last free-roaming herds of Cape buffalo are found there, along with a host of other wild animals and some 350 species of birds including the jacana, the bee-eater, the malachite

The Mekong River in full flood in the central plains of Cambodia, one of the world's most productive freshwater fishing zones.

PROTECTING THE WORLD'S WETLANDS

kingfisher and the African fish eagle. The region corresponds precisely to the following definition of wetlands, which features in the *Convention on Wetlands of International Importance especially as Waterfowl Habitat*, which was adopted at Ramsar in Iran in 1971: "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tides does not exceed six metres."

A report published by the World Conservation Union (IUCN) describes the situation as follows: "All deltas are notoriously unstable, and that of the Okavango, which is located between major fault-lines, is a particularly fragile ecosystem; its waters can disappear and sometimes reappear within a generation." Botswana is faced with severe water shortages, made even worse by a long drought, the worst in southern Africa this century. Apart from the River Chobe in the north, the Okavango is the country's only water source.

Aware that sustainable development involves wise management of water resources, the government of Botswana drew up a project to increase food production and provide water for Maun, a base for safari companies in the south of the delta, and for diamond mines located 280 kilometres to the south-east.

The project involved dredging 42 kilometres of waterways in the southern part of the delta and creating two reservoirs, each more than 100 kilometres long, which would have submerged good agricultural land. Local people were fiercely hostile to the idea, and Botswana's Water Affairs Department asked the World Conservation Union to produce a study on the impact of the project. The conclusion of the study was that there should be no dredging and that the two reservoirs should not be built, so that the waters of the Okavango could continue to flow and deposit their average annual silt load of over 700,000 tons. Instead, it suggested pumping ground water, sufficient quantitites of which are available.

STILL WATERS

While running water conjures up an image of cleanliness and purity, still water has a bad reputation. Marshes, swamps and bogs are generally thought of as gloomy, dismal, frightening places that exhale methane gas and are inhabited by cold-blooded, monstrous creatures. Malaria used to be known as marsh fever, and the draining of swamps has long been regarded as a public health measure. Yet wetlands have their uses: they play a part in replenishing ground water reserves, moderate the effects of flooding, stabilize coastlines and protect them during storms, retain sediments without becoming blocked as dams do, provide fodder for cattle, and furnish a habitat for fish and for wildlife generally, particularly birds.

The Ramsar Convention suggested that contracting parties should designate at least one wetland on their territory as being of international importance and should take steps to preserve its ecology. It also called on governments to promote "wise use" of wetlands, whether or not they appear on the Ramsar List of Wetland Sites of International Importance. In practice there are, of course, no means of enforcing the convention's proposals.

Take the example of Canada. *The State of Canada's Environment*, a report published in 1991, points out that "By June 1990, the Convention had designated 488 sites. Of these, the 30 in Canada cover 130,000 square kilometres of wetland habitat, the largest area of designated Ramsar wetlands of any country. This is not surprising, as Canada has 24 per cent of the world's wetlands. Although designation in itself provides no enforcable protection for wetlands, most of these are protected by existing federal or provincial legislation." Protection is badly needed for, as the Canadian government itself admits, agricultural draining has destroyed 85 per cent of the wetlands of British Columbia, the prairie states, southern Ontario and the Atlantic coastal marshes.

The situation is similar in the United States. The World Wide Fund for Nature (WWF) estimates that 870,000 square kilometres of wetlands have disappeared and that 80 per cent of one-time wetland has been put to agricultural use. In New Zealand, more than 90 per cent of wetlands have vanished since the first European settlers arrived, and draining is still going on. Two-thirds of the mangrove swamps in the Philippines disappeared between 1920 and 1980 to make way for the farming of shrimps and the fish known as *chanos*. In the Caribbean and on the Pacific coast of central America, mangroves are burned for charcoal. In Costa Rica their bark provides tannin for use in leather-working, and a national utility company is hoping to use them as substitutes for imported telephone poles.

Crocodiles in the Okavango delta (Botswana).

OTHER APPROACHES

The degradation of wetlands should not be laid solely at the door of greedy farmers. It is also caused in part by infrastructure development for industry, tourism and urban development; by the exploitation of non-renewable resources such

Recognized as a "wetland of international importance", the Okavango delta provides a home for the last free-ranging herds of Cape buffalo (below) and for many species of birds, including the jacana (left).

as peat or gravel; by the exhaustion of ground water; by overfishing or intensive or inappropriate fish farming; and by the reduction of surface water discharge, leading to changes in silt deposits.

But the threat to wetlands may also come from far away. WWF cites dam construction on the Ebro in Spain as an example. In the past, more than 20 million tons of silt were carried down to the delta each year; now only 3 million reach it. As a result, the complex of dunes, lagoons and saltmarshes vital for wildlife is being affected by increased sea and wind erosion. Catalan rice-growing has been affected, because more salt is being deposited on the rice-fields; mussel-beds have also suffered. "We have clearly not learned from our mistakes," writes Chris Tydeman of the British section of WWF, "for even now similar plans exist in Greece, including a scheme for several dams on the Acheloos River, which will have a devastating effect on the Messolongi wetlands—a Ramsar site."

Meanwhile proposals for controlling the increasingly severe floods in Bangladesh have been the subject of strong criticism. The international community is currently investing some $150 million on studying ways of protecting the population of Bangladesh from cyclones and flooding. But is it necessary, as has been suggested, to build embankments and other structures that risk cutting off land from the fertile silt that helps feed the country's 110 million people?

A dozen or so dams have been constructed on the Mekong River and its tributaries, and have served to produce electricity and to increase agricultural production via irrigation. But there have also been negative effects. Beneficial flooding has been reduced, and the diminution in freshwater inflow to the coastal zones, including the mangrove forests, has led to increased salinity and a lowering of the water level.

People seeking to protect natural ecosystems are locked in perpetual combat with the major construction and development companies, which are always on the lookout for big public works projects. If the environmentalists are to have any chance of winning, they must come up with detailed counter-proposals, and persuade governments that these ideas are feasible—and also cheaper to implement—as they have done in Botswana. ■

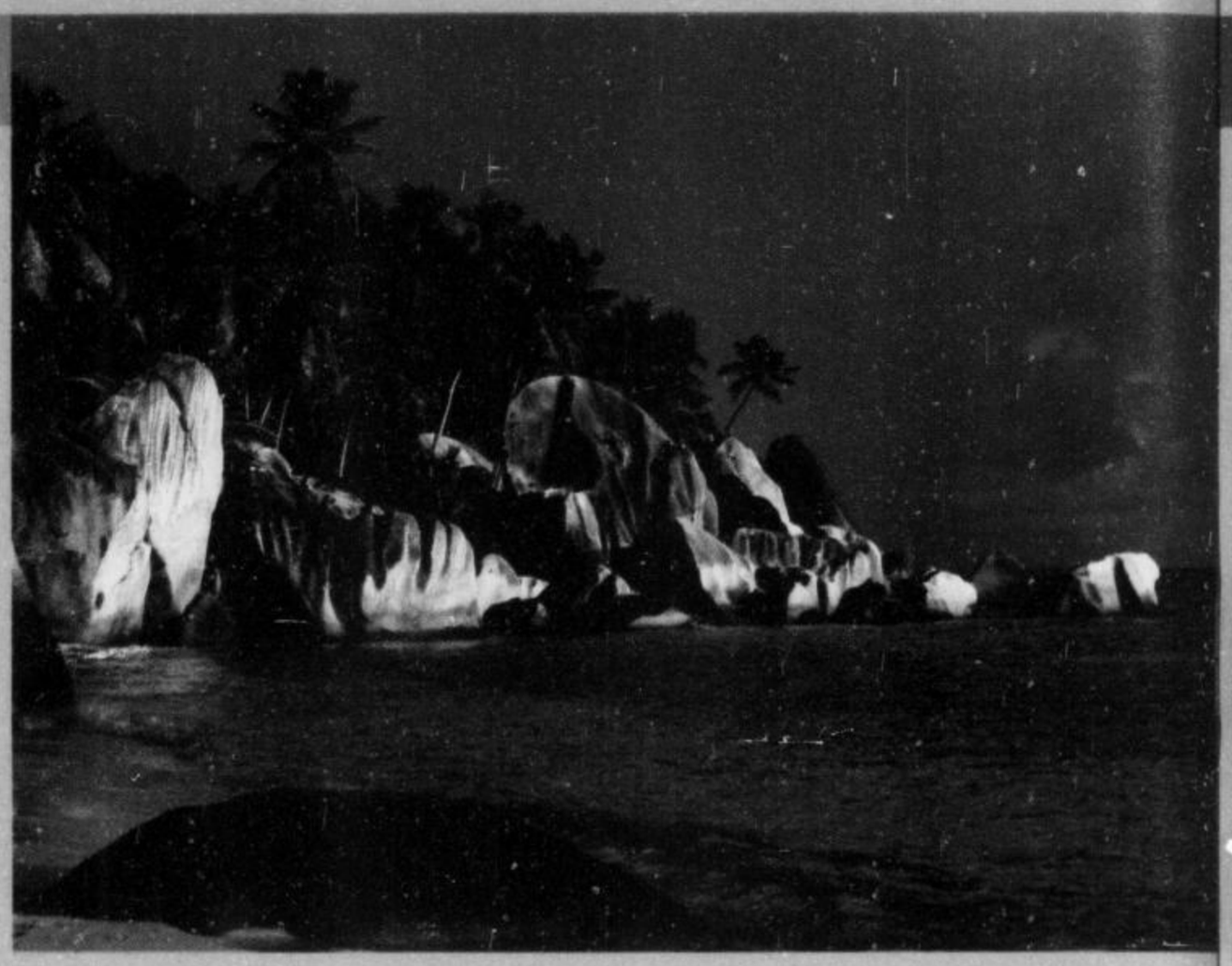
RECOMMENDED READING

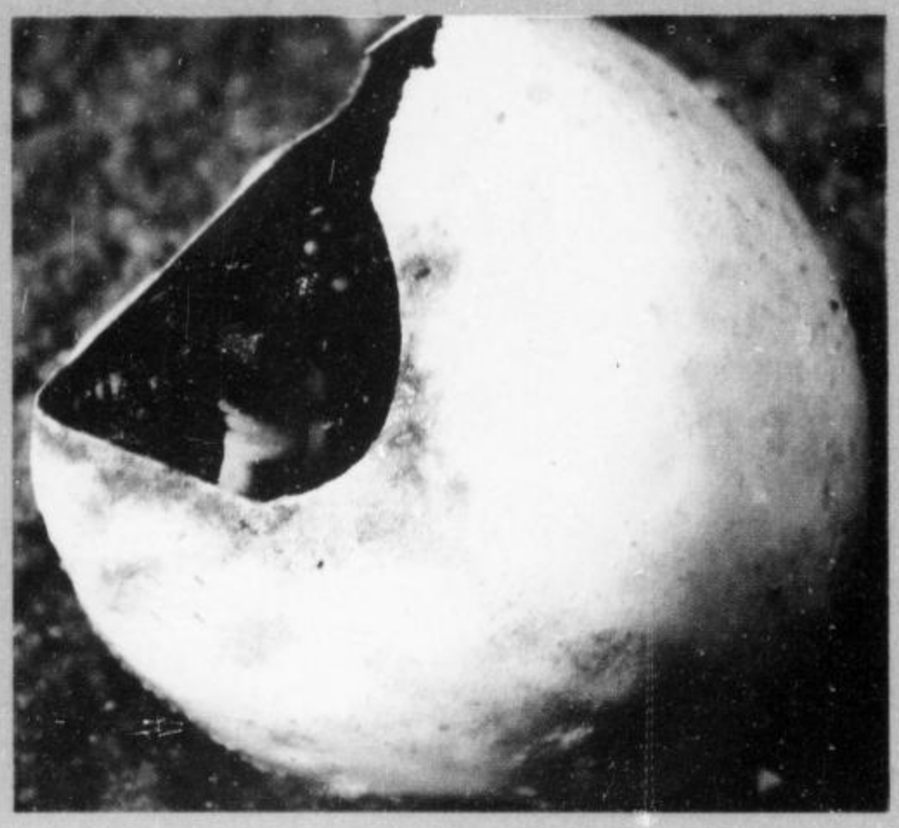
Wetlands in Danger, published jointly by the World Conservation Union and Mitchell Beazley, Reed International Books Ltd, London, 1993.

FRANCE BEQUETTE
is a Franco-American journalist specializing in environmental questions. Since 1985 she has been associated with the WANAD-UNESCO training programme for African news-agency journalists.

INVESTING IN THE ENVIRONMENT

As of June 1993, the Global Environment Facility (GEF) had committed $468 million for 53 investment projects managed by the World Bank. Among them were investments aimed at forest protection in Poland; biodiversity conservation in Bolivia, Congo and Turkey; development of coastal zone management plans for Egypt and the Seychelles; and renewable energy systems in India. ■





EX-POACHERS PROTECT BRAZIL'S TURTLES

Until recently Brazil's five species of marine turtle were overexploited for their shells, eggs, oil and meat. They had become an endangered species by 1980, when the country's Federal Agency for the Environment launched Operation Tamar (from "tartarugas marinhas", Portuguese for sea-turtles). Now the very people who once hunted turtles are paid to protect the beaches where they come to lay their eggs. The ex-poachers collect the eggs, put them in insulated boxes and take them for reburial in open-air hatcheries in one of 17 stations set up along the coast under the programme. When they have hatched, the baby turtles are returned to the wild. A total of 265,000 young turtles were released in this way between September 1991 and March 1992. To enable the local population to profit from the animals' presence without killing them, a craft industry has been established to sell T-shirts with turtle motifs and sculptures in papier-mâché and wood. ■

'OPERATION LADYBIRD'

Since 1981, the parks authorities in the city of Caen in western France have been waging biological warfare. Their weapons are ladybirds, which eat up aphids that attack rosebushes and other shrubs. Previously gardeners had used chemicals against the pests, but after training at France's National Institute for Agronomic Research (INRA) they took up ladybird-breeding instead—a task that in Caen only requires two man-hours' work a day. The operation was backed up by a public information campaign and educational projects carried out by schoolchildren. Each year from mid-March on, 40,000 hungry larvae are released; a further 7,000 are distributed to the population at large. These techniques may only be effective over relatively small areas or in greenhouses, but an operation of this kind also can also help to inform the public about the risks involved in the uncontrolled use of pesticides. ■

A child's drawing produced as part of a French environmental education programme connected with "Operation Ladybird".

TAMING THE WILD PEANUT

There are 80 known species of the wild, or "forage", peanut (*Arachis pintoi*), and 63 of them are native to Brazil. While the cultivated plant is an annual crop, the wild varieties are perennial—they grow indefinitely without replanting. They are highly productive, and like all leguminous plants they maintain soil fertility by "fixing" atmospheric nitrogen in nodules on their roots. They also combat erosion and control the weeds that attack coffee, African oil palm, coconut and rubber plantations. The plants are natural pioneers, spreading into open spaces, overcoming competition from other plants and producing plentiful seed. Scientists are now engaged in gathering as many species as possible in the hope of

isolating genes resistant to parasites and to diseases of the cultivated varieties of peanut. ■

CLEAN SAILING?

Several international accords concerning maritime transport require governments "to guarantee the right of free passage for ships in international waters and to allow innocent passage in their territorial waters". However, in the name of free passage, the measures countries take to protect the environment outside their territorial waters but within their 200-mile economic zones are not mandatory. Furthermore, agreement has not yet been reached in international fora on requirements concerning the qualifications of naval officers or requirements concerning ships (such as double-hull oil tankers to limit the risk of spills). Since a captain's certificate can be bought for a few hundred dollars in some countries and ships are sometimes dilapidated, it is hardly surprising that ecological catastrophes happen. ■

THE CFC SUCCESS STORY

"It's a beautiful case study of environmental action. Industry has moved more quickly than scientists or government thought." So claims James Elkins of the Climate Monitoring and Diagnostics Laboratory in Boulder, Colorado (U.S.A.) with regard to the decline in the growth of emissions of the two chlorofluorocarbons (CFCs) principally blamed for damaging the Earth's ozone layer. Elkins, who recently published a report on the subject in the British journal *Nature*, has been measuring CFC concentrations since 1977 at various locations in polar, temperate and tropical regions around the world. The improvement in the situation follows on a 1987 international protocol banning the chemicals and encouraging industrialists to find suitable substitutes. However, Elkins also points out that the problem has not disappeared. "All we've done is slowed down the destruction (of the ozone layer). We are still going to have Antarctic ozone holes until the next century." ■

CHANGING COURSE AT WWF

WHEN it was founded in 1961, WWF—the biggest private international organization devoted to the conservation of nature—was known as the World Wildlife Fund. In 1986 it changed its name to World Wide Fund For Nature, though in the United States and Canada the old title is still used.

The change reflects the broadening scope of the organization's field of action. Originally WWF was a small organization that concentrated on problems such as endangered species and habitat destruction. Twenty years later it had become an international concern involved in every form of nature conservation, with a $40-million budget. With the Duke of Edinburgh as its president, WWF now has five million members in 28 national branches on every continent. In the run-up to the "Earth Summit"—the UN Conference on Environment and Development which brought 118 heads of government and representatives of 170 states to Rio de Janeiro (Brazil) in 1992—it published, in conjunction with the World Conservation Union and the United Nations Environment Programme, an important work entitled *Caring for the Earth—A Strategy for Sustainable Living* that has been translated into ten languages.

The first task WWF has set itself is to persuade states to ratify the two conventions signed at Rio—one on biological diversity, the other on climate change. In addition it has some 800 projects currently under way. In the field of environmental education, WWF insists that material should be produced locally, and only provides financial and technical aid.

Among its initiatives is a wildlife school set up in 1968 in Garoua (Cameroon) to train park guards and biologists. In India WWF helped the holy city of Vrindavan, where Hindus believe Krishna was born, to replant the once shady path that attracts millions of pilgrims each year. The sacred site, which lies not far from Delhi, features an 11-kilometre path that had become denuded and strewn with litter. In 1992 the International Society for Krishna Consciousness, with the aid of WWF, established a nursery of 10,000 trees, flowering shrubs and medicinal plants. Local people also helped to clean up the area.

WWF helps the 7,000 non-governmental organizations in developing countries which seek to inform people of the need to protect their natural resources. Typical WWF action includes helping the Entebbe Zoological Gardens in Uganda develop an education centre, donating a photocopier to the Friends of Wildlife in the Philippines, and helping the Barbusano Ecological Club in Madeira (Portugal) to publish a brochure.

In addition to work of this kind, WWF is involved in major programmes to maintain biodiversity in the Baltic Sea, in Mongolia's national parks, in Nigeria's tropical forests and among the coral reefs of Belize. For those who are interested in environmental issues, WWF also produces a range of useful and well-produced books and brochures. Those wishing to bring a project to the attention of WWF should send an account of it to WWF International, Programme Services, 1196 Gland, Switzerland (tel: 41 22 364 91 11; fax: 41 22 364 05 26). ■

HIDDEN WATERS ■ by Daniel Balland ■

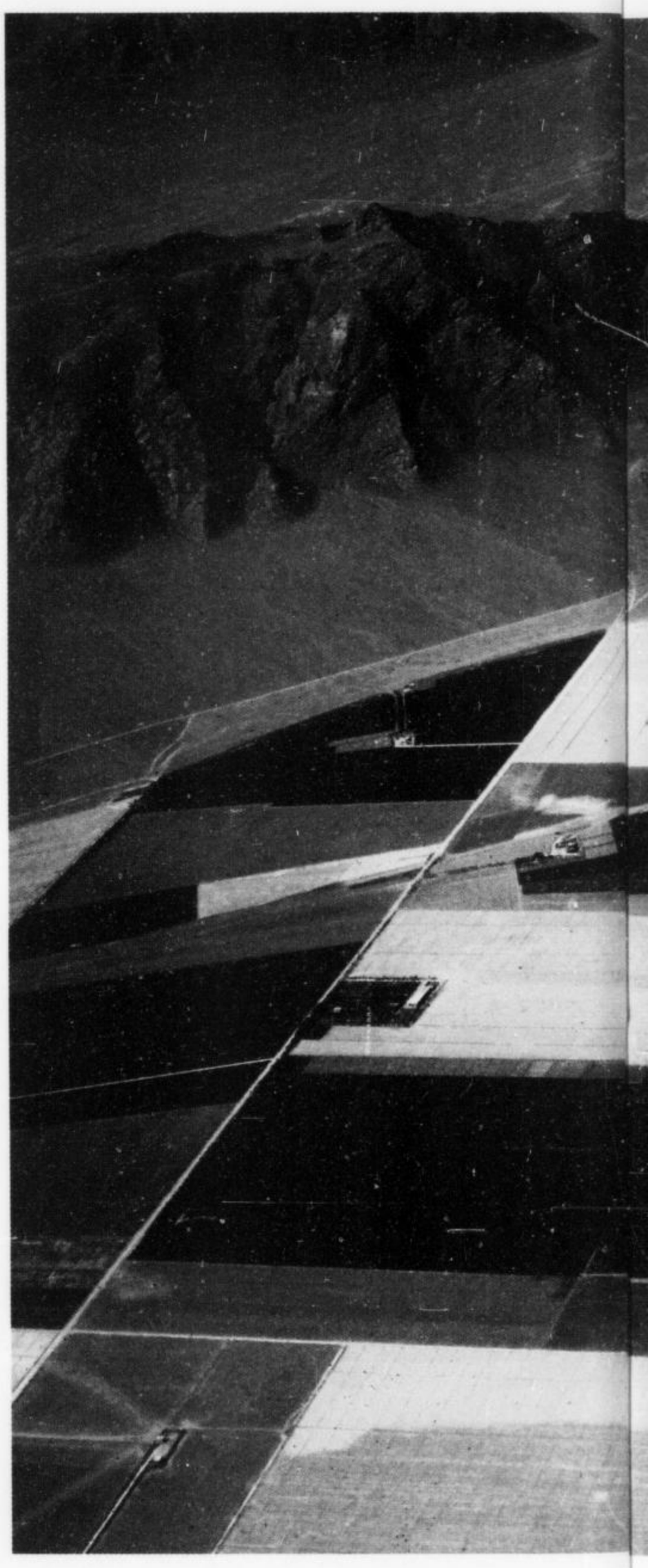
For centuries arid land in many parts of the world has been made fertile by tapping underground mountain water through tunnels—often several kilometres long—that are masterpieces of hydraulic engineering

THE world's biggest and oldest oases are, to adapt Herodotus's celebrated phrase about Egypt, the "gifts" of great rivers such as the Nile, the Tigris, the Euphrates, the Helmand, the Indus, the Amu Darya and the Syr Darya, the Tarim and others. However, it is in the extraction of "hidden" water from underground aquifers that oasis-dwellers have shown their genius for hydraulic engineering. An extraordinary range of techniques have been used for this purpose. Most of them share a common characteristic: the use of an external energy-source to raise the water from the aquifer to the fields that need irrigating.

There is, however, a remarkable exception to this rule. The drainage tunnels known as *qanats* in Arabic and *kârêz* in Persian are driven into hillsides virtually horizontally, with just enough slope to allow water tapped from an underground source to flow off into the open air by the force of gravity alone. A regular 0.1 or 0.2% gradient (which is to say an incline of a metre or two per kilometre) is about right: less than that, and the slope encourages alluviation, so the tunnels need to be cleaned out more often; more, and the flow of water causes excessive erosion.

Each tunnel divides into a tapping section penetrating into the aquifer and a downstream section that carries the water out to the fields. The amount of water extracted, and therefore the surface area irrigated, depends on the length of the former. The tunnel must be big enough for a man to move about and work in. Typically, it may be 1.3 metres high by 80 centimetres wide. Lengths vary greatly, from a few hundred metres to several dozen kilometres; the average seems to be about three kilometres.

On the surface the only sign that there is a tunnel is a line of air-vents sunk every 20 metres or so. These vertical shafts, which provided access when the tunnel was being dug, are used



Cultivated plots in the foothills of the Zagros Mountains (Iran), the region where irrigation by water tunnels was developed to the highest degree of technical perfection.

subsequently for maintenance work. The further up the hillside they are, the deeper they are. Shafts several dozen metres deep are common; some may be far deeper than that. Each one is surrounded by a ring of rubble, like some giant molehill pierced in the middle by the vent itself.

At the point where the tunnel emerges into the open air, there is always something magical about the sight of fresh water flowing naturally all the year round into a pool or irrigation channel. Women and children come to fetch unpolluted water, and the menfolk like to gather here after the day's work. This is a focal point of social life in the oasis.

Some small oases are irrigated by a single tunnel, but more commonly several—sometimes even several dozen—form an organized network. In some cases the system is added on to a network of channels diverted from a river. When building an underground infrastructure of this type, whether simple or complex, specialists have to decide on three essential matters: the location and depth of the aquifer that is to be tapped; the area to be irrigated; and the direction and slope of the tunnel needed to connect the two. Building the tunnel is a long and dangerous job. It is only really feasible when labour is cheap and plentiful, typically under some form of agrarian capitalism based on slave-owning or a feudal system. Most of the tunnels

currently in use are, therefore, survivals from the past, living fossils that are kept in working order with varying degrees of success. Clearing them out is a relatively straightforward job, but rebuilding them when they collapse or lengthening them to compensate for a lowering of the water table are difficult and expensive operations.

It is estimated that some 30,000 tunnels are today in use in different parts of the world. Placed end to end, they would stretch for more than 100,000 kilometres, or over two and a half times round the Earth.

Oriental satrapies and New World colonies

Although some scholars have tried hard to prove that this irrigation system originated in their own part of the world, it seems to have spread as a result of a fairly straightforward process of diffusion. The most comprehensive treatise on the art of digging a *kârêz*, the *Kitâb inbât al-miyâh al-Khafiyya*, or "Book of the Extraction of Hidden Waters", was written in Arabic in about 1019 A.D. by Mohammed al-Karadji. As his name suggests, the author came from Karadj, a town that once stood on the slopes of the Zagros Mountains, 100 kilometres southeast of Hamadan. Now Hamadan, as it happens, is the ancient Ecbatana, imperial capital of the Medes and summer residence of the first Achaemenids—in other words, the centre of the very region that was the cradle and principal diffusion point of this irrigation technique.

The construction of *kârêz* in fact originated in the kingdom of Urartu, in the district surrounding Lake Urmia, early in the last millennium of the pre-Christian era. It probably developed as a simple dewatering technique designed to run off seepage threatening to inundate mines that penetrated a subterranean aquifer. The genius of the people of Urartu lay in transforming it into a technique to tap water for irrigation.

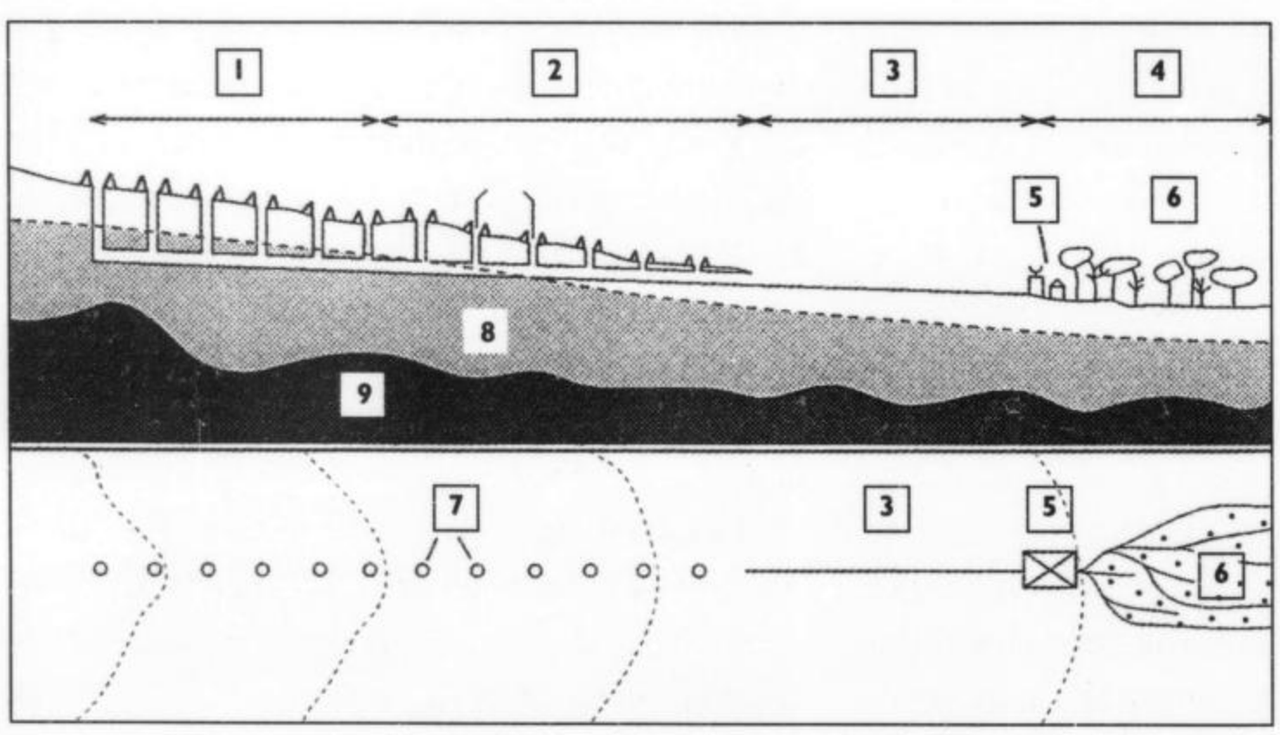
A by-product of the mining economy, *kârêz* irrigation is known to have existed by the late eighth century B.C. In the course of the next four centuries it spread, with state encouragement, throughout the lands of the Persian Achaemenid Empire, from the oriental satrapies of Arachosia and Gandhara (in present-day Afghanistan and Baluchistan) to the western satrapies of Egypt, Arabia and Syria. From there the Phoenicians, who founded Carthage and played an important part in the transmission of oriental techniques to the Mediterranean West, introduced it to North Africa.

In the following centuries *kârêz* were introduced to various peripheral regions, but there was little technical innovation, even in the Islamic era, which in other respects was so fertile in agricultural innovation. There was a half-hearted attempt to introduce the system to the Deccan, but only as far as we know at a few isolated sites such as Ahmadnagar and Burhanpur. It was used on a far larger scale in Spain, where tunnels were dug as far north as the Ebro basin and in Catalonia. The only surviving evidence for it today is that of place-names, starting with the name Madrid, which derives from the Arabic *madjrît*, meaning "place where there are *madjrâ*", one of the words that were used to denote the tunnels in the Iberian peninsula.

Spain's importance in the history of the *kârêz* stems principally from its role as a secondary centre of diffusion from which the technique spread to areas where it is still used today. These areas include Lanzarote in the Canary Islands, the former Spanish colonies in America and also the western Maghreb, where the system may have been used in Almoravid times in the ninth century A.D. The area in which the technique came into use most recently is generally considered to be the Xin Jiang region of China, where its introduction is normally dated to the eighteenth century. It may, however, have arrived there much earlier via that great cultural highway, the Silk Road.

Diagram of a drainage tunnel (in cross-section and viewed from above)

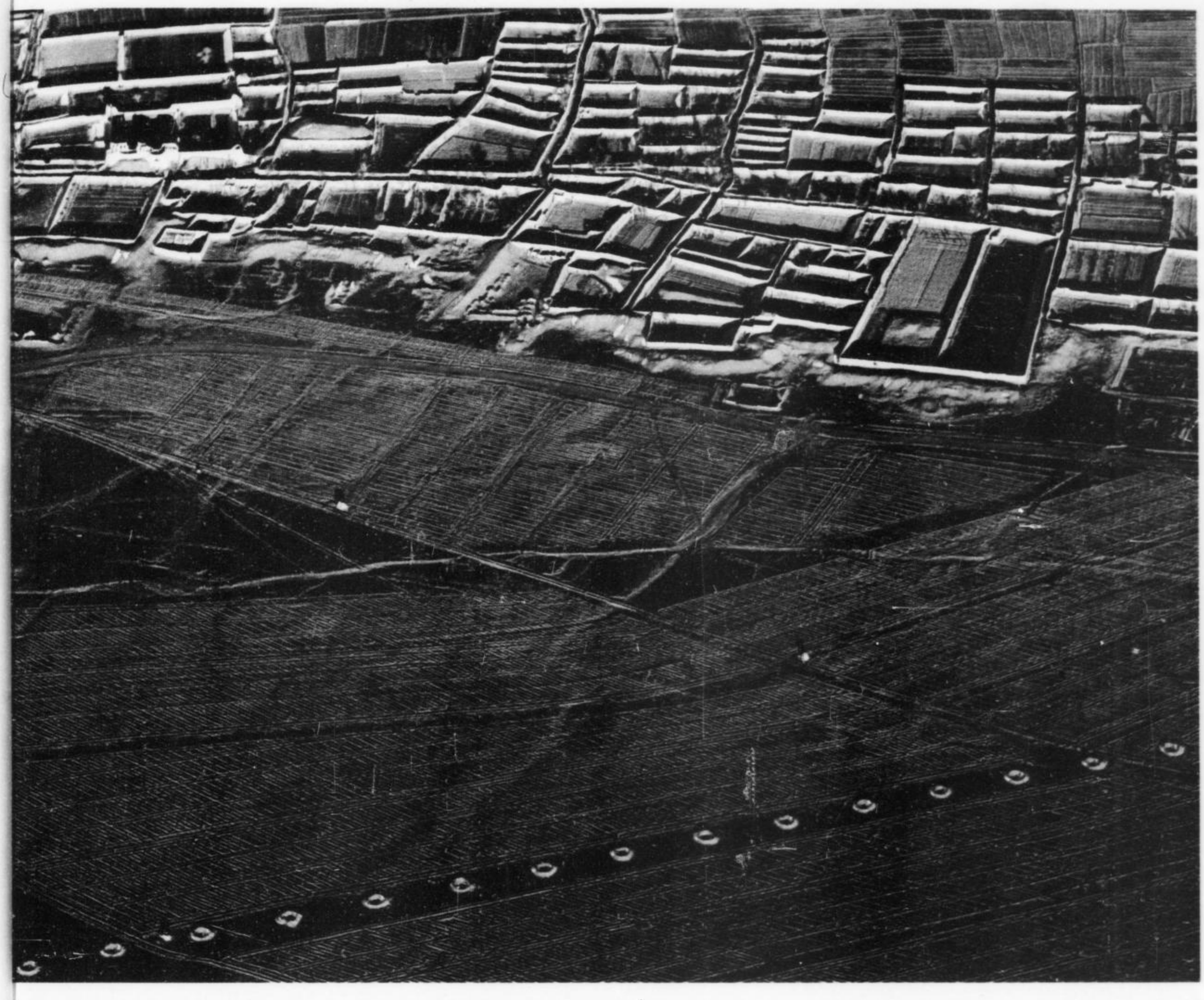
1. Underground tapping section
2. Underground feeder section
3. Open-air section
4. Irrigated area
5. Village
6. Cultivated land
7. Air-vents
8. Aquifer
9. Impermeable rock



Standing the test of time

Meanwhile, by far the greatest concentration of tunnels in the world is undoubtedly on the dry uplands of the Irano-Afghan plateau, at the heart of the ancient Achaemenid Empire. Of the 30,000 *kârêz* known in the world today, Afghanistan has one fifth and Iran three fifths.

The borders of the central Iranian desert are probably the place where the "hidden water civilization" has reached its highest degree of technical perfection. The *moqanni* (workers who specialize in digging *kârêz*) of Yazd have



Irrigated land in Iran. The air-vents of water-tunnels can be seen in the foreground.

always rightly been held in high regard. It is in their area that the longest and deepest tunnels, the product of extraordinary technical prowess, are found. Here too ingenious systems of tunnels on different levels were designed and constructed, with lower tunnels collecting infiltration from those above. In tunnels where the flow was particularly abundant extraordinary underground water-mills were built, accessible to pack animals via no less amazing sloping tunnels.

What are the prospects for this form of irrigation? It is reportedly in decline everywhere, not so much because many of the tunnels are disappearing as because they are not being replaced when they fall into disuse. When a tunnel ran dry in the past, a new one was constructed some distance away, for unlike river oases which are forever physically tied to the stream that replenishes them, *kârêz* oases were to some extent moveable. This is no longer the case now that a massive exodus from the countryside has combined with galloping wage inflation to virtually do away with all new construction, particularly in the oil-producing countries. Now when a tunnel dries up, wells equipped with motor-pumps are dug, contributing to the lowering of the water table and speeding up the decline of the *kârêz* network.

Here and there, however, a reaction is setting in, and oasis-dwellers are coming up with original solutions to the problems confronting them. Farmers in the Gourara region of Algeria are attempting to revive tunnels that are running dry by installing motor-pumps in them. Similar steps have been taken in Xin Jiang, where wells sunk near to *kârêz* have been connected to them in order to increase their discharge. This combination of modern and traditional techniques permits tunnels that otherwise would have been abandoned to remain in use, at least for a time.

Once threatened with extinction, the "civilization of hidden waters" that has profoundly shaped the development of many oases still seems to have a bright future. ■

DANIEL BALLAND
is a French geographer whose special field of interest is the arid regions of central Asia. His publications include *Les eaux cacheés. Etudes géographiques sur les galeries drainantes souterraines* (Paris,1992).

A LONG LOOK AT THE WORLD'S ARID

■ by Michel Batisse ■

D LANDS

UNESCO's pioneering work in arid zone research, begun over 40 years ago, was the starting point for a continuing effort to mobilize science in the cause of the global environment

UNESCO IN ACTION

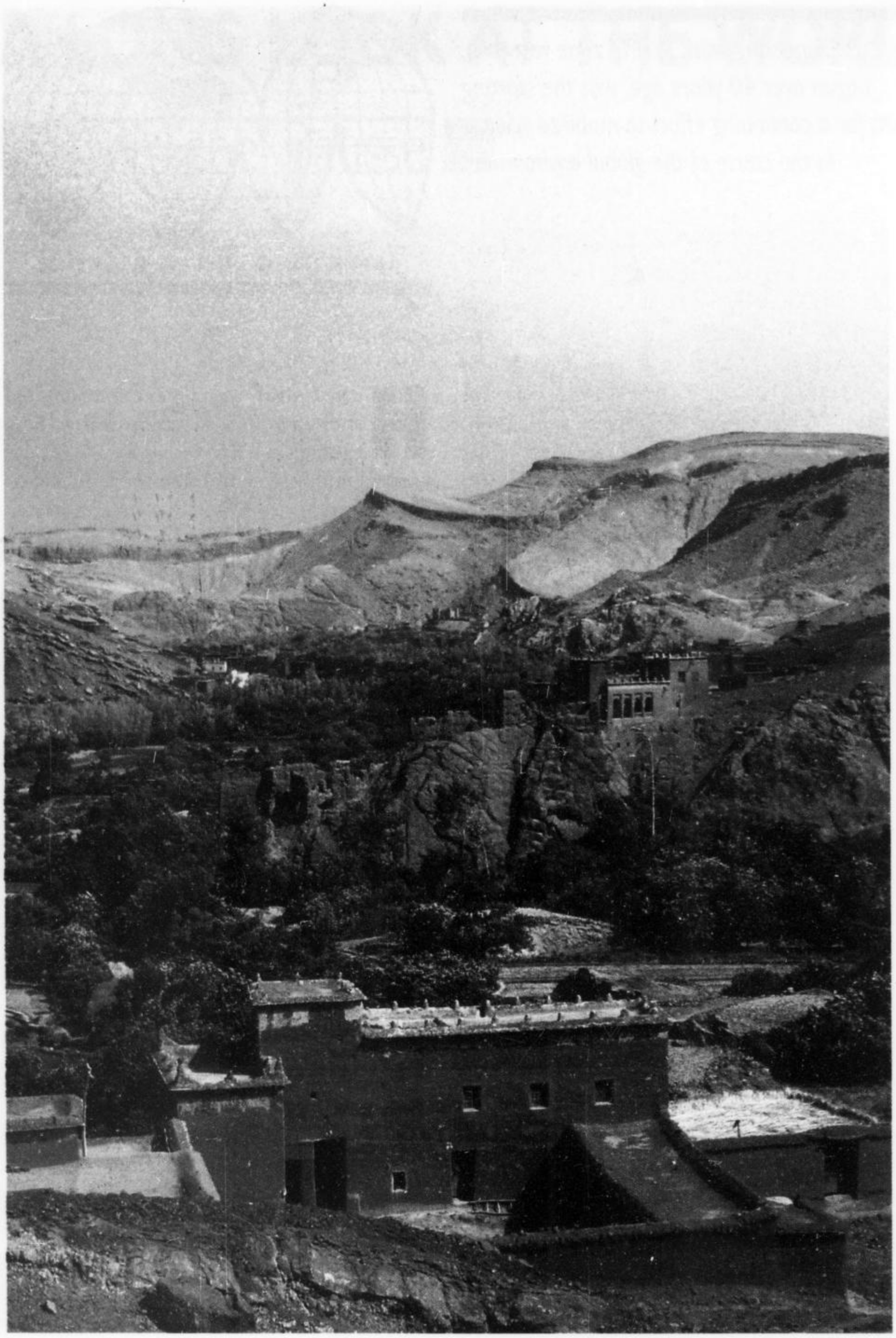
HUMANKIND has always encountered aridity, and over the ages has learned how to come to terms with it by using water wisely. Until very recently, however, the industrialized world viewed arid regions as little more than the impoverished habitat of a few nomads, or as a place of adventure or meditation for those wishing to follow in the footsteps of people like Lawrence of Arabia and the French explorer and missionary Father Charles de Foucauld. Scientific knowledge of the desert was limited to geographical descriptions. Only a handful of dreamers wondered how these desolate areas could be used. There was plenty of room elsewhere.

The situation changed after the Second World War with the emergence of newly independent nations facing serious demographic and food supply problems. In 1948, UNESCO's General Conference in Beirut adopted a proposal put forward by India—and considered surprising by many at the time—to the effect that UNESCO should examine the possibility of establishing an international institute for the arid zone. The following year a group of experts was invited to Paris to study the question. The panel wisely ruled out the idea of a centralized institute located far from most of the areas concerned, which are widely scattered across the globe, and recommended instead that an international advisory committee be established. The new body's first session was held in Algiers in April 1951. This was the origin of UNESCO's Arid Zone Research Programme.

Few people today remember the achievements of this programme. Leading scientists from different countries and disciplines served on the advisory committee, under whose guidance a series of innovative activities was carried out for a modest outlay during more than a decade.

The first task was to draw up a complex and detailed map showing the world's arid zones

A salt caravan passes through the Danakil Plain bordering the mountains of northern Ethiopia.



An oasis in the Draa valley in southern Morocco.

and their degree of aridity. This map was based on an innovative projection of the globe that resembles the four quarters of an orange. It became the programme's emblem, and appears on some thirty documents in the "Arid Zone Research Series" published by UNESCO between 1953 and 1969. Today these books with their sand-coloured covers are almost impossible to find, but their contents have lost none of their validity and they may be the most important legacy of UNESCO's activities in this period. They examine subjects such as hydrology, climatology, plant ecology, solar and wind energy, nomads, and human psychology and physiology. One of them is devoted to the first world symposium on climate change—a topic very much in the news today—which was held in Rome in 1961. Another contains a "History of Land Use in Arid Regions", which describes the long struggle for survival in these hostile

environments in Egypt, Mesopotamia, central Asia, Peru, Mexico and on the Indus.

The first steps

UNESCO did more than publish reviews of research and promote the exchange of information. It also encouraged scientific research in the field and trained hundreds of specialists. Above all, in 1957 it upgraded what had hitherto been one programme among many to the rank of a "Major Project" with additional funding. This new status helped to raise the profile of activities that were already under way as well as spurring interdisciplinary research and the creation of national centres to promote the development of arid regions. The Indian Arid Zone Research Institute in Jodhpur and Israel's Negev Desert Institute in Beersheba were established under the auspices of UNESCO, which also lent support to other bodies, such as the Egyptian Desert Institute in Cairo.

The Major Project on arid lands paved the way for technical co-operation between the industrialized countries of the North and the impoverished nations of the South—today a firmly established practice—and laid the groundwork for a horizontal exchange of skills and experience between the latter. At the same time it demonstrated what could be gained from establishing a more direct dialogue between scientists and resource managers. This is still important today for determining to what extent research findings are applicable—and are actually applied—in the field.

It is one thing to make theoretical studies based on a wide range of disciplines; implementation of their findings is another since it is confronted with social, economic and political factors at the local and national levels—and even at the international level through the interplay of world market forces and strategic interests. The Major Project showed that the convenient expression "arid zone" covers a very wide range of different situations. It taught us that what might be valid for one place is not necessarily so for another.

UNESCO's analysis of the factors that contribute to aridity led to the preparation of a new world map that was published on the occasion of the United Nations Conference on Desertification held in Nairobi in 1977. It revealed the whole range of climatic conditions involved, from the extreme aridity of sandy or rocky deserts to the many so-called semi-arid or subhumid regions, in which farming and grazing activities are practicable, while entailing more or

Nomads gather at a well in the Rigestan desert in southern Afghanistan.

less severe risks of degradation. Furthermore, the fact that the same physical and biological conditions obtain in a number of areas does not necessarily mean that these areas share the same economic, social and cultural environment; nor are the same solutions necessarily applicable to all areas with a given degree of aridity.

One example among thousands may serve to illustrate this problem. One of the goals of the arid zone programme was to find out the maximum level of salinity in water that could be used for irrigation. A study project was developed for Tunisia and presented for financing to the United Nations Development Programme (UNDP). The first reaction, based on expert advice, was totally negative. The reason given was that the water in question contained more than one gram of salt per litre and that research by a laboratory in California generally accepted as an authority in this field had shown that water with such a high degree of salinity could not reasonably be used for irrigation. The problem was that this was the only water available in Tunisia, and that farmers there had been using it to grow crops for some 2,000 years! The project was eventually approved. It turned out successfully and has served as a model for several Arab countries.

Asset or burden?

Most arid zones are areas where economic activity is negligible. Their sunny skies and open spaces are advantages in countries with other assets, such as the United States and Australia. They are ideal for geological research because of their lack of vegetation. They may also contain large deposits of minerals and other natural resources, as in the case of the oil-rich countries of the Middle East, which are wealthy enough to subsidize irrigation, deplete their fossil aquifers and run energy-intensive sea-water desalinization plants. For countries like India, Kenya and Brazil, however, arid zones are an additional burden to their considerable economic and demographic problems. Other countries, such as Mauritania and Somalia, have nothing but arid land to live on.

It is not surprising, therefore, that research findings are not always applied or that countries affected by desertification such as those of the African Sahel, whose plight shocked the world, are not inclined to attach priority to their drought-stricken areas. Most of these countries would rather channel their investments to more productive land, unless there are sound political or strategic reasons to do otherwise.

And yet remedies for desertification caused by population pressure and overgrazing are far from unknown. They consist of sustainable management of marginal ecosystems, appropriate economic and social development, and more efficient use of human resources. The lessons of UNESCO's work, underscored by the United Nations Conference on Desertification, show that the technology exists to maintain agricultural output and raise living standards, and consequently keep populations from migrating. The necessary water and soils can be found, even in the vast Sahel. However, this presupposes a rapid transition from a low level of education and technical skill to the ability to practise modern forms of irrigation and grazing. It takes time to turn traditional nomads into efficient farmers, and such a transition calls for massive institutional, technical and financial backing. In a sense, the development of arid zones raises a problem that is found in all countries, even the richest: how to use the least productive areas and how to develop an integrated land use strategy.

Science to serve the environment

Given these conditions, it is not surprising that UNESCO's work on arid zones, begun over four decades ago, is still far from over. The Major Project was only the start of a long, far-reaching United Nations effort to use science in the service of the environment and development. The problem of aridity poses the problem of water resources, which led UNESCO to launch a new research programme, in this case based on intergovernmental co-operation, into the cycles, amount and quality of the world's fresh water. This was the International Hydrological Decade, in which more than a hundred countries took part between 1965 and 1974. It was followed in its turn by the International Hydrological Programme, which still goes on today.

One important step forward made by the Major Project was to reveal the complexity of the interactions between natural phenomena

In the Agades region of central Niger, Tuareg dig an irrigation channel after giving up nomadism following a drought.

An aerial view of the Egyptian coast at the mouth of the Gulf of Suez.

and human activities and to show the need for an interdisciplinary strategy to understand and control these interactions. In 1968 an intergovernmental conference on the "scientific basis for rational use and conservation of the resources of the biosphere" was held in Paris. This meeting was an extension of the arid zone programme and took account of its experience and the network of contacts it had created. It focused on all the world's ecosystems, not just arid zones. After all, the problems that are emerging everywhere today are caused by the same conflict between the functioning of nature and the pressure of human activity.

It was the biosphere conference, held twenty-five years ago, that launched the idea that the use and the conservation of nature should be reconciled, in other words the notion of "sustainable development" which was solemnly adopted by the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro last year. It also called for the launching of a new worldwide research programme on "Man and the Biosphere"—the MAB programme—which is still the main instrument at the disposal of UNESCO and its member states for proposing scientifically acceptable solutions to the problems posed by the use of land and its resources by the human race, whose numbers and appetites continue to increase. ■

MICHEL BATISSE, French physicist and engineer, is a former Assistant Director-General with UNESCO's Science Sector. He was the co-ordinator of UNESCO's Major Project on arid lands.

AFRICA: LEARNING TO MANAGE THE DESERT

■ by Mohammed Skouri ■

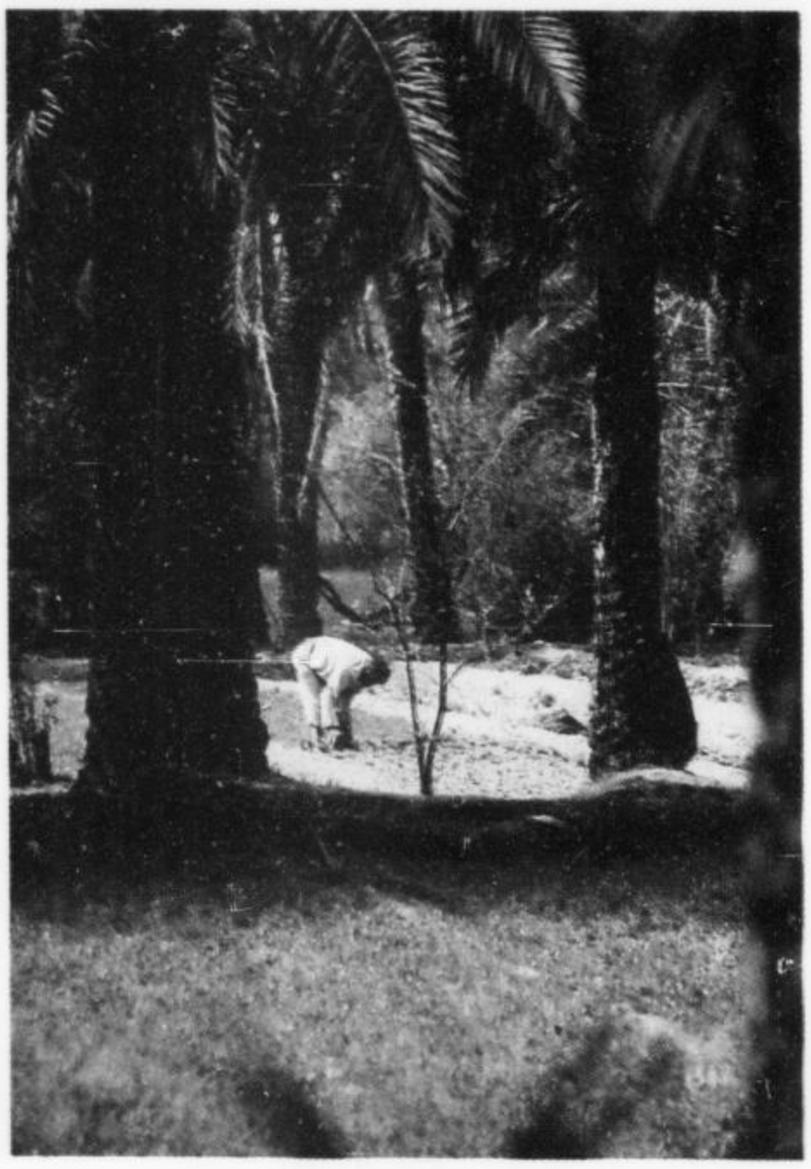
UNESCO IN ACTION

THERE are more arid lands in Africa than in any other continent. In addition to these natural deserts where there is very little rainfall, there is also an area twice as large, straddling the Tropics of Cancer and Capricorn, that receives insufficient rainfall and is affected to varying degrees by processes that lead to desertification.

The problem, whose main cause is human activity, is not new but rapidly expanding human and animal populations are making it worse and more widespread by increasing the pressure on fragile ecosystems.

The severe drought that struck the Sudano-Sahelian region of Africa between 1968 and 1973 drew attention to this disruption in the ecological balance and to the deterioration of living conditions in the region. It also brought widespread sympathy and support for the people of the Sahel, and sparked a new interest in arid regions that found expression notably in the United Nations Conference on Desertification held in Nairobi in 1977. The Conference was followed by numerous regional initiatives, including the creation of an interstate committee on drought control in the Sahel. Within the framework of its Man and the Biosphere (MAB) programme, UNESCO launched a number of projects which provided an opportunity for specialists in the field to share experiences and information.

A palm grove in an oasis in southern Tunisia.



From 1976 to 1987 the integrated project on arid lands in northern Kenya, implemented in co-operation with the United Nations Environment Programme (UNEP) and with assistance from Germany, focused on traditional livestock farming systems in the dry lands of northern Kenya. The main aim was to develop these systems in such a way as to improve local living conditions while also protecting the environment.

The region's climate, soils, flora, fauna and water resources were analysed as part of the project, which led to the establishment of a management plan for about half the 22,500-square-kilometre area studied, which extended between Lake Turkana and Mount Marsabit.

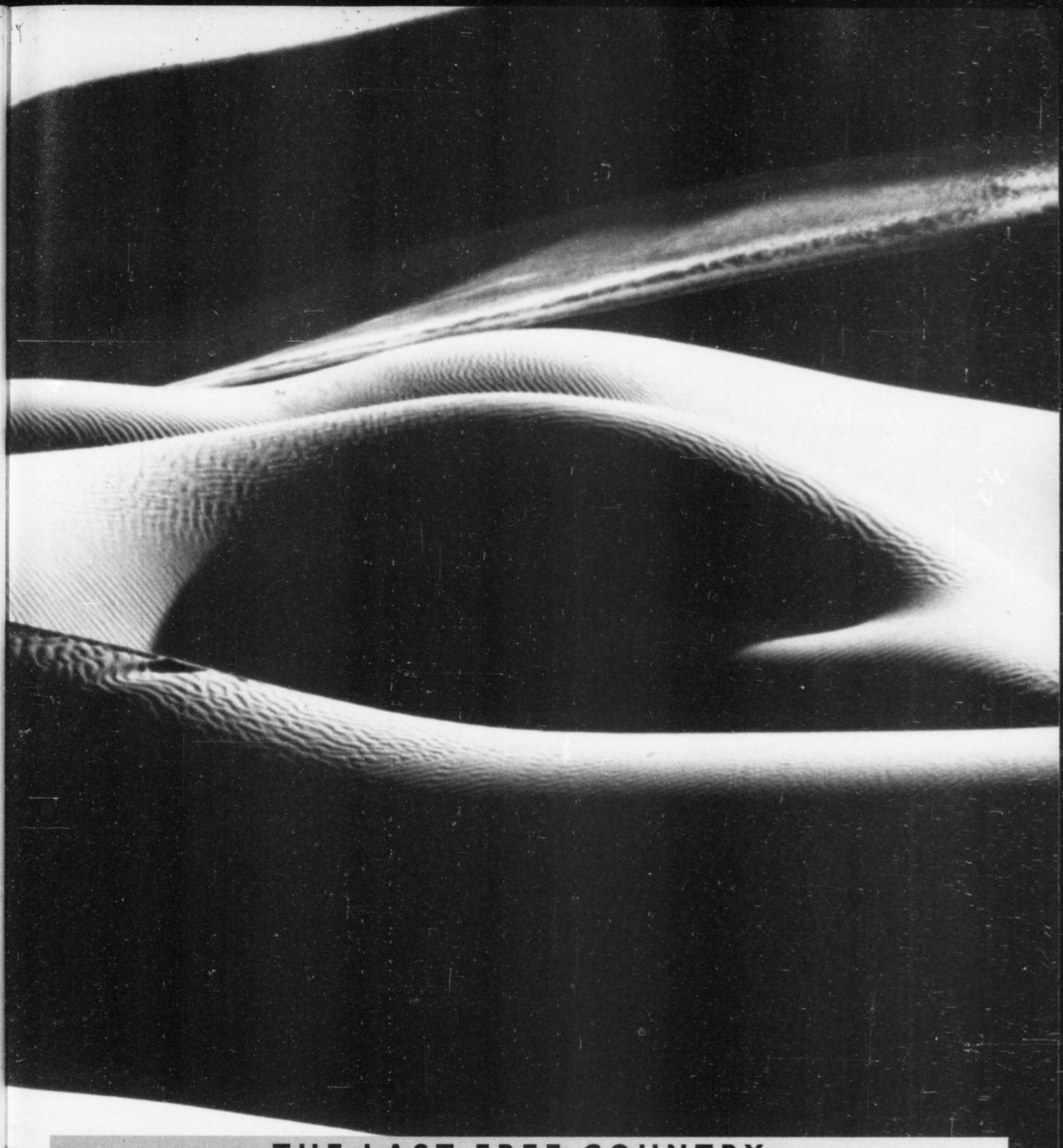
The integrated project on arid zones in southern Tunisia, implemented between 1980 and 1984 with support from UNEP, took a very different approach. This part of Tunisia had already been extensively studied, and the project sought to update research findings and put them to better use, and to extend training programmes designed to develop local skills. As a follow-up, a pilot project on desertification control in southern Tunisia was carried out, in which remote sensing was used for continuous monitoring of desertification. The pilot project also focused on the ecology of plants that hold down the sand and on improving plant cover, notably by extending the planting of species that could serve as fodder.

The project's results provided the technical basis of the anti-desertification strategy adopted by the Tunisian government in 1986.

The project on training for integrated pastoral management in the Sahel concentrated largely on the development of human resources and on the adoption of a new approach to rural development specially adapted to local conditions. Between 1980 and 1989 112 senior managerial staff and 151 technicians from twelve countries in the Sudano-Sahel region were trained, and ten regional seminars on agricultural, pastoral and sylvicultural development were held.

The training programmes encouraged a comprehensive, interdisciplinary approach to the problems of the Sahel that took account of the different aspects of development—biophysical, socio-economic and technical—and of the relations between them. ■

MOHAMMED SKOURI
is a member of UNESCO's Division of Ecological Sciences. An agronomist, he specializes in problems of arid zones.



THE LAST FREE COUNTRY...

It was as if there were no names here, as if there were no words. The desert washed everything away in the wind, obliterated everything. The men had the freedom of the wide open spaces in their eyes; their skin was like metal. The sunlight exploded everywhere. Ochre, yellow, grey and white, the light sand shifted, revealing the wind. It covered every footprint, every bone. It repelled light, drove water, life, far from a centre that nobody could recognize. The men knew that the desert didn't want them; so they walked without stopping, on paths other feet had already trodden, to find something else. As for water, it was in the aiun, eyes the colour of the sky, or in the damp beds of ancient mudstreams. But it was not water for pleasure or for rest. It was just a trace of sweat on the surface of the desert, the parsimonious gift of a dry god, the last spasm of life. Heavy water torn from the sand, dead water of the fissures, alkaline water that caused stomach pains and made people vomit. Keep on going, then, bent a little forward, in the direction the stars had given.

But it was perhaps the last and only free country, the country where men's laws had no importance. A country for the stones and for the wind, but also for scorpions and jerboas, creatures that know how to take refuge when the sun burns down and the night is frosty.

J.M.G. Le Clézio

Désert (© Gallimard publishers, Paris 1980)

THE PRICE OF PEACE

COMMENTARY

by Federico Mayor

THE world has changed. The fall of the Berlin Wall in 1989 and the dissolution of the Soviet Union in 1991 marked the end of Cold War confrontation between the two major power blocs, which is undoubtedly the most important political transformation of the last few years.

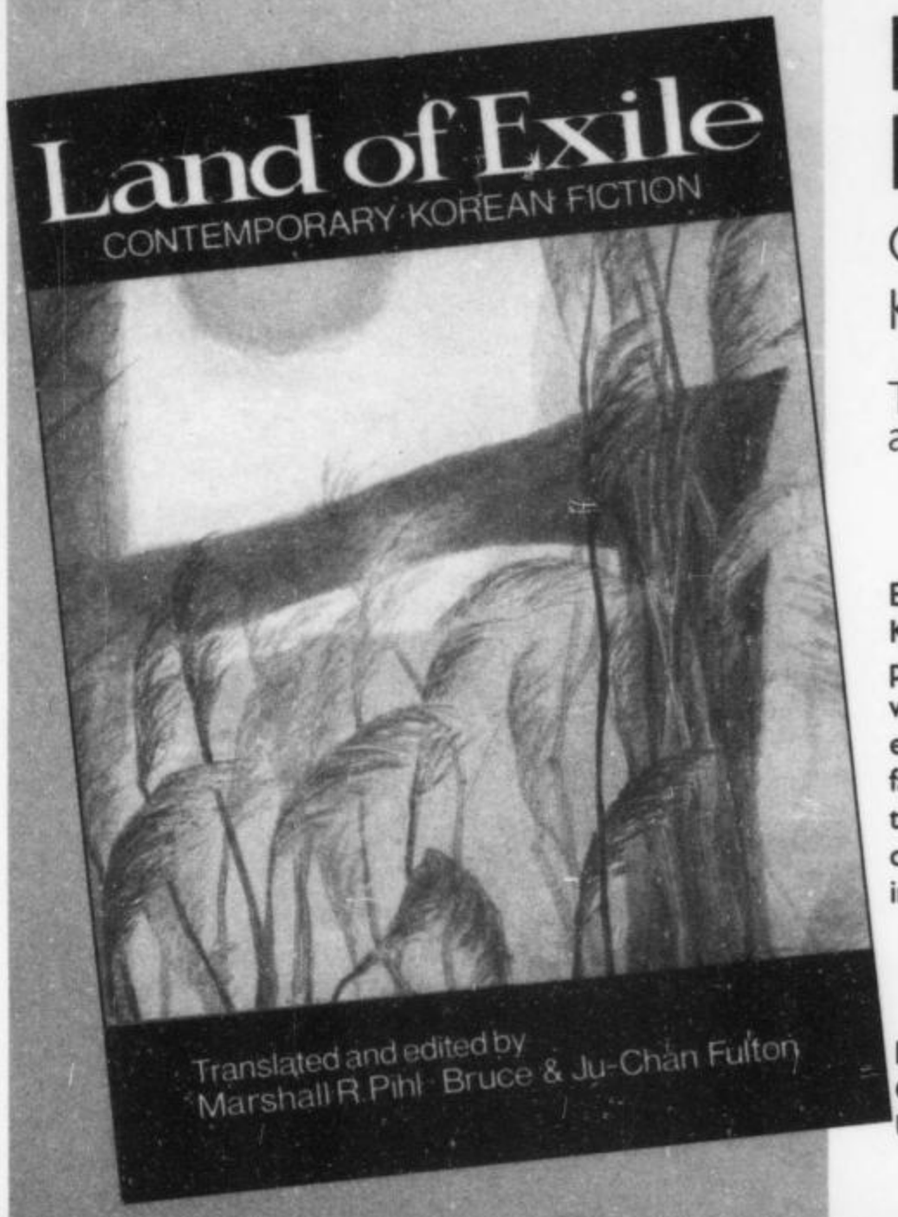
What has this meant for world peace? The geopolitical interpretation, perhaps the commonest, maintains that bipolarity based on the existence of two nuclear powers of equal strength was the guarantee of peace over the last forty years. Now that this balance of terror has disappeared, all kinds of wars are once again possible.

I do not share this view of "negative peace". In the first place, it is inaccurate since, while applicable in some degree to Europe, it does not take account of the hundreds of wars that have devastated other parts of the planet since 1945. Secondly and most importantly, it overlooks the perverse effects of the unquestioned paradox that "war is unthinkable but disarmament is impossible", which made superpower confrontation the inescapable fate of several generations and justified the arms race as the only rational solution.

The end of the Cold War has nullified the logic of this reasoning. The widespread propagation of violence, which is a characteristic of the second half of the twentieth century, today appears to us as a self-evident fact and forces us to recognize that the nature of war and its protagonists have changed. War today assumes the form of civil war and its belligerents are not states but the distinctive communities—ethnic and social—which seek political fulfilment to compensate for their personal, cultural and social frustrations.

This exaggerated desire for political compensation explains why the achievement of freedom in the countries of Central and Eastern Europe has mainly taken the form of a radical affirmation of the integrity of their collective identities and has been reflected in intransigent and violent claims for the restoration of ideal frontiers. The Geophysical Institute of the Moscow Academy of Sciences reported in 1991 that of the twenty-three frontiers that separated the different republics only three were fully accepted, which put at seventy-five the number of poten-

This article is one of a series in which the Director-General of UNESCO sets out his thinking on matters of current concern



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1993, 118 pp. Co-published with Peter Owen, UK.
140 French francs

TWILIGHT COUNTRY

BY KNUT FALDBAKKEN

Knut Faldbakken, one of Norway's leading contemporary writers, depicts the struggles of individuals who learn to co-operate, creating a new society from the detritus of the old. In this stark portrayal of a civilization in decline, there are unnerving similarities with our own.

1993, 216 pp. Co-published with Peter Owen, UK.
138 French francs

tial trouble spots, seventeen of which were already the scene of open conflict.

In the face of these intrastate wars, ethnic and cultural in origin, fluctuating and intermittent, highly varied and changing in form, involving an unpredictable and indeterminate number of participants, traditional conflict scenarios have little to tell us. These situations require profound historical and sociological analysis; they call for a new cultural approach—tenacious and imaginative—that sees prevention as the only possible solution. In other words they demand—more than ever—a culture of peace, and thereby assign UNESCO a key role in this context.

Redefining the concept of security

What are difficult are the conceptual changes, the changes in course that future generations will reproach us for not having made if we do not have the clear-sightedness and spiritual strength needed to embark on them. Not only has war changed; so too have the conditions affecting our collective security, and indeed the very concept of security itself. For that reason I think the United Nations Security Council, as it approaches the fiftieth anniversary of its foundation, could come up with a fresh definition of the idea of security, which is now so different from what it was in 1945. In my opinion, all the global threats to security—deterioration of the environment and living conditions, population problems, cultural and ethnic incompatibilities, lack of respect for human rights and so on—should be regarded as falling within the competence of the Security Council.

If we really want to put an end to this other kind of threat to our security, part of the vast sums spent on military power must be invested in the struggle against poverty, especially in rural communities, so as to prevent the violence and mass emigration that result from it. Money will have to be invested to abolish the shameful situation of street children and child labour. We are accepting the unacceptable. We are continuing to arm ourselves against enemies who no longer exist, and we stand defenceless before those now threatening us.

We are well equipped to contend with the more conventional dangers of war culture. We have armies, and our national budgets include appropriations for defence and armaments. But the amount of aid provided to help developing countries to mobilize their immense potential remains derisory. The results are poverty, excessive population growth, mass emigration, intolerance and violence. We are paying a preposterous price for our short-sightedness. The first threat facing us today is that posed by the deepening chasm that divides the countries of the North from the countries of the South. Yet there can be no doubt that the world is one and that either we go forward together or we shall be unable to avoid chaos and disaster. A global outlook is now the prime condition of our survival.

The most developed countries must realize that they will only be able to solve their own problems within this global and unitary perspective, by contributing without delay to the development of the countries of the South. If we want to sow the seeds of coexistence in places where today we are reaping the fruits of distrust and intolerance, then the most developed countries will have to decide to invest in collective security before it is too late.

We will have to change our habits even though it may be unpopular to do so. There is an urgent and imperative need for us to think, without self-censorship or fear, about how we can overcome the great contradictions that beset our contemporary world. How, for example, can we reconcile the dichotomy between ethical requirements and technical rationality?

A new civil pact

We find this dichotomy in the different approaches of those who advocate either *development* or *human rights*. While some talk in terms of human rights and democracy, others speak of development. We often forget what is most important of all—the human being—and the need common to all—justice. If the globalization that communication and technology make possible can lead to the best as well as the worst, why not choose the best?

It is clear today that without the agreement of peoples and without their participation, neither states nor institutions can shape the course of history by means of economic or political conventions. We thought that economics and politics would bring happiness and progress, and that they eliminated the need for conscience. It is not so.

Therefore, change we must. We must learn to pay the price of peace just as we had to pay the price of war. We shall have to set fresh priorities. We shall have to convince all statesmen of the need to draw up a pact for education and for social development.

We must strengthen democratic systems, because the big issues of the present day can only be tackled and resolved in a democratic context. The state must concentrate on its role as guarantor, and civil society must take its destiny in hand. Education is the keystone of a strong democracy, as it is of economic growth. The only possible form of development is that in which every individual is both participant and beneficiary. On the world scale, access to knowledge and the transfer of knowledge are the only basis on which we can build democracy, that common dimension where all differences can exist peacefully, side by side, in synergy.

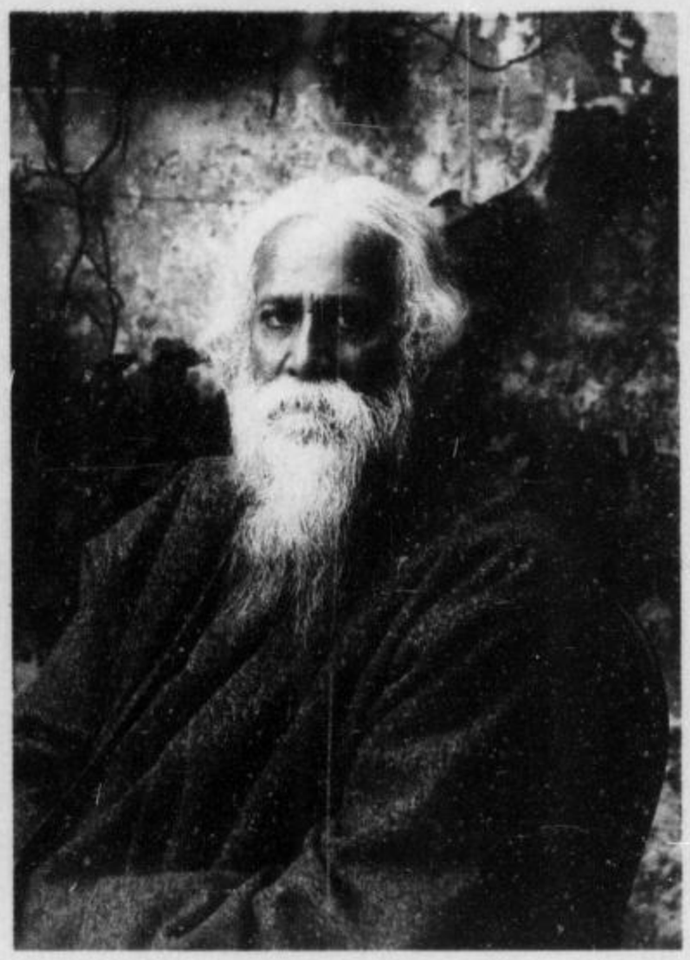
We must guarantee democratic systems in which all individuals, minorities and peoples can freely express the characteristics of their cultures and, at the same time, get to know, respect and—why not?—admire and incorporate characteristics of other cultures. The defence of minority cultures is an issue of the utmost importance and, no matter how sensitive it may be, UNESCO must tackle it, since it is a major source of misunderstanding, isolation, marginalization and violence.

Culture is not spread by retreating into itself or by a process of territorial fragmentation. It is not by drawing frontiers that the rights of everybody and every culture will be respected. Each person is both unique and universal, but the future of humanity lies in intermingling, in the fruitful union of the most varied civilizations. We must protect and foster all forms of diversity. ■

Rabindranath Tagore

A greater awareness of truth

The letter published below, in abridged form, appeared in* Correspondance, *a journal published (in French) by the International Institute of Intellectual Co-operation. It was sent in 1934 by Rabindranath Tagore to the British classical scholar Gilbert Murray. In response to Murray's "friendly appeal" for a "closer comprehension of the problems faced by our common humanity", the great Bengali writer, who had won the Nobel Prize for Literature in 1913, set out to "deal with some details of our present problems of India and put them in relation to the larger aspect of international relationship as I view it". For Tagore, then aged seventy-three, it was an opportunity to express yet again his unshakable confidence in humanity.



Rabindranath Tagore (1861-1941).

"Uttarayan",
Santiniketan, Bengal.
September 16th, 1934.

My Dear Professor Murray,

. . . . I must confess at once that I do not see any solution of the intricate evils of disharmonious relationship between nations, nor can I point out any path which may lead us immediately to the levels of sanity. Like yourself, I find much that is deeply distressing in modern conditions, and I am in complete agreement with you again in believing that at no other period of history has mankind as a whole been more alive to the need of human co-operation, more conscious of the inevitable and inescapable moral links which hold together the fabric of human civilization. I cannot afford to lose my faith in this inner spirit of man, nor in the sureness of human progress which following the upward path of struggle and travail is constantly achieving, through cyclic darkness and doubt, its ever-widening ranges of fulfilment. . . .

Now that mutual intercourse has become easy, and the different peoples and nations of the world have come to know one another in various relations, one might have thought that the time had arrived to merge their differences in a common unity. But the significant thing is, that the more the doors are opening and the walls are breaking down outwardly, the greater is the force which the consciousness of individual distinction is gaining within. . . .

Individuality is precious, because only through it can we realize the universal. Unfortunately there are people who take enormous pride in magnifying their speciality and proclaiming to the world that they are fixed for ever on their pedestal of uniqueness. They forget that only discords are unique and therefore can claim their own separate place outside the universal world of music.

It should be the function of religion to provide us with this universal ideal of truth and maintain it in its purity. But men have often made perverse use of their religion, building with it permanent walls to ensure their own separateness. Christianity, when it minimizes its spiritual truth, which is universal, and emphasizes its dogmatic side, which is a mere accretion of time, has the same effect of creating a mental obstruction which leads to the misunderstanding of people who are outside its pale. . . .

We have seen Europe cruelly unscrupulous in its politics and commerce, widely spreading slavery over the face of the Earth in various names and forms. And yet, in this very same Europe, protest is always alive against its own iniquities. Martyrs are never absent whose lives of sacrifice are the penance for the wrongs done by their own kindred. The individuality which is Western is not to be designated by any sect-name of a particular religion, but is distinguished by its eager attitude towards truth, in two of its aspects, scientific and humanistic. This openness of mind to truth has also its moral value and so in the West it has often been noticed that, while those who are professedly pious have sided with tyrannical power, encouraging repression of freedom, the men of intellect, the sceptics, have bravely stood for justice and the rights of man. . . .

In India we have ourselves become material-minded. We are wanting in faith and courage. Since in our country the gods are sleeping, therefore, when the Titans come, they devour all our sacrificial offer-

I V E S

Text selected and presented by Edgardo Canton

ings—there is never a hint of strife. The germs of disease are everywhere; but man can resist disease only when his vital force is active and powerful.

So, too, even when the worship of the blood-thirsty and false gods of self-seeking are rampant on all sides, man can lift up his head to the skies if his spirit is awake. Both matter and spirit are active. They alone become entirely materialistic who are only half men, who cripple the native majesty of the spirit before the blind repetition of unintelligent activities; who are niggardly in knowledge and palsied in action; who are ever insulting themselves by setting up a meaningless ritual in the place of true worship. . . .

Beggars at the gate

In India, what is needed more than anything else is the broad mind which, only because it is conscious of its own vigorous individuality, is not afraid of accepting truth from all sources. . . . I have come to feel that the mind which has been matured in the atmosphere of a profound knowledge of its own country, and of the perfect thoughts that have been produced in that land, is ready to accept and assimilate the cultures that come from foreign countries. He who has no wealth of his own can only beg, and those who are compelled to follow the profession of beggary at the gate of the intellectually rich may gain occasional scraps of mental food, but they are sure to lose the strength of their intellectual character and their minds are doomed to become timid in thought and in creative endeavour.

A certain number of us do not admit that our culture has any special features of value. These good people I leave out of account. But the number of those others is not few, who while admitting this value in theory, ignore it more or less in practice. Very often, the flourishing of the banner of this culture is not for the sake of the love of truth but for that of national vain-gloriousness—like brandishing a musical instrument in athletic display before one's own admiring family, instead of using it to make music. . . .

The evolving Hindu social ideal has never been present to us as a whole, so that we have only a vague conception of what the Hindu has achieved in the past, or can attempt in the future. The partial view before us at any moment appears at the time to be the most important, so we can hardly bring ourselves to the true ideal, but tend to destroy it. And there we stand fasting and telling beads, emaciated with doing penance, shrinking into a corner away from the rest of the world.

We forget that Hindu civilization was once very much alive, crossing the seas, planting colonies, giving to and taking from all the world. It had its arts, its commerce, its vast and strenuous field of work. In its history, new ideas had their opportunity. Its women also had their learning, their bravery, their place in the civic life. In every page of the *Mahabharata* we shall find proofs that it was no rigid, cast-iron type of civilization. The men of those days did not, like marionettes, play the same set piece over and over again. They progressed through mistakes, made discoveries through experiment, and gained truth through striving. . . .

Man shows his mental feebleness when he loses his faith in life because it is difficult to govern, and is only willing to take the responsibility of the dead because they are content to lie still under an elaborately decorated tombstone of his own make. We must know that life carries its own weight, while the burden of the dead is heavy to bear—an intolerable burden which has been pressing upon our country for ages.

The fact stands out clearly today that the Divinity dwelling within the heart of man cannot be kept immured any longer in the darkness of particular temples. The day of the *Ratha-yatra*, the Car Festival, has arrived when He shall come out on the high way of the world, into the thick of the joys and sorrows, the mutual commerce, of the throng of men. Each of us must set to work to build such a car as we can, to take its place in the grand procession. The material of some may be of value, of others cheap. Some may break down on the way, others last till the end. But the day has come at last when all the cars must set out.

The great awakening

Your letter has been a confirmation to me of the deep faith in the ultimate truths of humanity which we both try to serve and which sustains our being. I have tried to express how religion today as it exists in its prevalent institutionalized forms both in the West and the East has failed in its function to control and guide the forces of humanity; how the growth of nationalism and wide commerce of ideas through speeded-up communication have often augmented external differences instead of bringing humanity together. Development of organizing power, mastery over Nature's resources have subserved secret passions or the openly flaunted greed of unashamed national glorification. And yet I do not feel despondent about the future, for the great fact remains that man has never stopped in his urge for self-expression, in his brave quest for knowledge; not only so, there is today all over the world in spite of selfishness and unreason a greater awareness of truth. . . .

In India, too, there is a great awakening everywhere, mainly under the inspiration of Mahatma Gandhi's singular purity of will and conduct, which is creating a new generation of clear-minded servers of our peoples. . . .

I feel proud that I have been born in this great Age. I know that it must take time before we can adjust our minds to a condition which is not only new, but almost exactly the opposite of the old. Let us announce to the world that the light of the morning has come, not for entrenching ourselves behind barriers, but for meeting in mutual understanding and trust on the common field of co-operation; never for nourishing a spirit of rejection, but for that glad acceptance which constantly carries in itself the giving out of the best that we have.

Yours sincerely,

RABINDRANATH TAGORE ■

UNESCO IN ACTION
HERITAGE

The Stone Age temples of Malta

by Ann Monsarrat

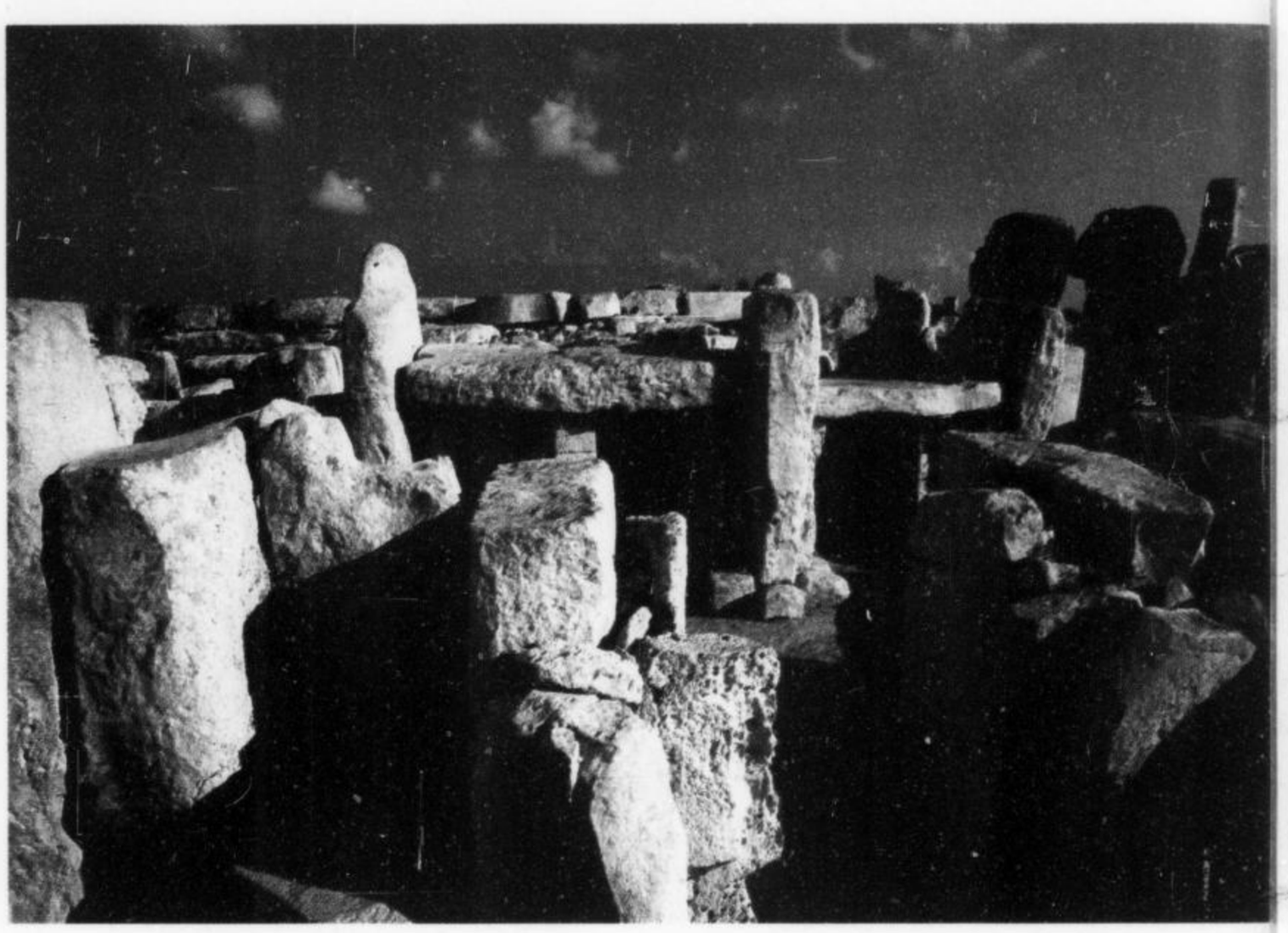
DURING the first half of the present century European archaeologists, puzzling over the similarities between ancient cultures, came up with the diffusion theory: a steady spread westwards of ideas, skills and inventions from the early civilizations of the Near East. In this way the mud-brick ziggurats of ancient Sumeria (the first temples known to man) had influenced the Egyptian pyramids (the oldest stone monuments in the world) and Malta's megalithic buildings were a mere reflection of the glories of ancient Greece.

There was only one problem. They had no way of confirming exactly when anything had happened. Then came radiocarbon dating, an offshoot of the research that produced the atomic bomb. The first radiocarbon dates did little to disturb the basic fabric of the theory, but when the technique was refined in the mid-1960s it blew holes through the entire edifice. Small communities, previously considered to be talented imitators, were shown to have been ingenious innovators astonishingly advanced for their time.

The Egyptians could no longer be said to have created the oldest free-standing stone monuments in the world because the Stone Age temple builders of Malta had beaten them to it.

The new dating showed that in the tiny cluster of Maltese islands, way out in the middle of the Mediterranean, a people without a written language or knowledge of any kind of metal had raised vast, highly sophisticated structures several hundred years before the Egyptians began work on their own triumphs in stone. They had begun building around 3600 B.C. and continued for over a thousand years.

They built their temples singly and in groups, added to them, embellished and enlarged them. Their richly decorated interiors were previously thought to have been inspired by the great Greek civilizations of Crete and Mycenae, but it is now clear that Malta's temple culture had flourished and died before the Greek civilizations were born.



The imposing temple complex at Hagar Qim in Malta.

Today four of the largest temple complexes figure on the tourist trail. At least forty more survive in various stages of disarray. Others have disappeared completely, spirited away into boundary walls and house foundations. They were built on a small archipelago with a total land area of little more than 300 square kilometres: a massive stone construction for every seven square kilometres. As British archaeologist David Trump has written: "there is probably no other area of this size in the world with such a number and variety of antiquities."

The oldest and best preserved of the temples is on Gozo, the second largest and most northerly of the islands. As with all their other temples the builders selected a choice site. Its great, grey mass stands on one of the island's distinctive flat-topped hills above a fertile valley. Its vast megaliths, never completely covered by the silting up of time, led to folk stories of a female giant who, by day, strode the land carrying the great slabs on her head, and built by night. It is still called Ggantija, the Maltese word for giantess.

The builders found on the islands an abundance of two kinds of limestone: a durable grey upper layer and beneath it one that cuts and looks like butter. They put both to good use in nearly all of their temples but nowhere else did they build a surrounding wall quite as astonishing as the one at Ggantija. Massive blocks of hard grey stone, one of them the size of a small cottage, are laid alternately upright and sideways to form a first course eight metres high. Above them smaller blocks teeter upwards for a further two metres.

Two temples, with great lobed chambers, built of smaller stones, share this colossal overcoat. The two entrances stand side by side on the concave façade, flanked by pillars of soft, golden limestone once

doubtless capped by lintels of equally impressive dimensions. The oldest temple has a threshold made of one enormous slab of golden stone and beside it lie round rocks, the size of cannon balls, that rolled it into place. The interior walls were originally plastered and painted with red ochre, the remains of which could still be seen clinging to the stones until only a few years ago.

Unhappily, Ggantija was the first of the temples to be uncovered. In the 1820s it was dug out (rather than excavated) by enthusiastic but untrained hands. Many treasures must have disappeared with the rubbish. A carved snake climbing a stone, another rather more phallic stone, and two finely modelled stone heads give some indication of what else might have been there. A charming piece of pottery, part of a bowl incised all round with two lines of birds in flight, is difficult to associate with the term Stone Age.

Two more temple complexes, Hagar Qim and Mnajdra, which stand within sight of each other above the southern cliffs of the main island of Malta, received only slightly better treatment. But it was here, at Hagar Qim, that were found the statues which have become a symbol of the temple culture. They are known as "fat ladies", though whether they really are ladies is still in dispute. They have massive hips, thighs and upper arms, and neat little hands and feet, and they sit in lady-like positions, but very few of them have female breasts.

Fortunately, Tarxien, the last great temple to be built, and the Hypogeum of Hal Saflieni, an underground cemetery in use during almost the entire temple period, remained undisturbed until Malta had produced an archaeologist worthy of them. Both of them were discovered at the start of this century by builders digging foundations. Both of them now stand in the middle of housing developments, but at least most of their treasures were preserved.

If there had ever been any doubt about the importance of the fat ladies in temple culture this was dispelled by the discovery of their giant sister at Tarxien. Local farmers, tired of catching her in their ploughs, had done their best to break her up, but her elegant feet, massive calves and outsized pleated skirt survived the onslaught. When complete she would have stood nearly three metres high. Placed on a richly carved plinth, and given the prime position, she was, breasts or no breasts, undoubtedly the deity—the Earth Mother, Life, the Goddess of Fertility, or whatever it was they called her.

It had long been thought that animal sacrifice had played a part in temple rituals and Tarxien appears to have confirmed this too. When the excavators removed a small flap, cut by the temple carvers into a richly decorated altar front, they found in the cavity behind it a long flint knife and a bundle of animal bones.

Tarxien displays the apex of the temple-carvers' art. As well as elaborately branched and running spirals and the stippling of incised dots on the stone, there are fine reliefs of bulls and horned sheep or goats and a sow followed by her piglets. A pair of particularly dense spirals stares sternly from a step leading up into what was probably the most sacred of the inner sanctums, like a pair of eyes keeping a watch for trespassers. The temple builders carved all this, as they did everything else from megaliths to underground caverns, with nothing to aid them but stone tools.

Legs and skirt are all that remain of this statue of an Earth Mother in the ruins of the temple of Tarxien (c. 2800 B.C.) on the island of Gozo.

The Hypogeum, a man-made series of caves that reaches through several levels deep into the earth, is considered to be even more remarkable than the temples on the surface. An estimated 7,000 bodies were buried here, along with their grave goods of pottery, shells and polished stones, but the most astounding thing about it is the large circular chamber, cut from the living rock to imitate the interior of the temples above ground. Many of the temples contained small models of themselves, but here, sheltered from the elements, is a full-size replica unwithered by time.

Peaceful farmers

What kind of people could they have been who created all these riches? Where did they come from and what happened to them? Some of the answers are now emerging from another subterranean burial site, the Brochtorff Circle, near Ggantija on Gozo. An Anglo-Maltese team of archaeologists, meticulously probing and recording, has been working there for the past six years and from long buried grain and pollen, bones and artifacts, they are beginning to piece the story together.

It seems that around 5000 B.C. the islands' first inhabitants made their way across the sea from Malta's nearest neighbour, Sicily, ninety kilometres to the north. They were farmers, growing barley and wheat and bringing with them cattle, goats, sheep and pigs. They appear to have been a remarkably peaceful people, fearing

THE IMPACT OF TOURISM

The influx of tourists over the past twenty years or so has been both good and bad for Malta's neolithic remains. Temples built to receive only a select few are now daily bombarded by coachloads of sightseers. However, the enthusiasm of foreign visitors does seem to have contributed to a growing local awareness of the inestimable value of these national, indeed world, treasures. The listing in 1993 as World Heritage Sites of all the buildings of Malta's Temple Period (which are now regarded as a single unique phenomenon) has given this awareness an additional boost.

The islands' prosperity, to which tourism has been a large contributor, means that more funds are available to help preserve the monuments. Rescue archaeology is well organized, and Malta's university is providing more archaeologists to deal with it.

PRESERVATION

The preservation of so many sites is an undoubted burden for a small nation with a population of only 350,000, but in the last few years great strides have been made and the help of world experts enlisted.

UNESCO has funded the plans for a comprehensive scheme for the preservation of the Hypogeum of Hal Saflieni and is contributing to the costs of putting them into effect. Within a year this unique subterranean complex should have its own microclimate and a carefully controlled number of visitors.

For years the main temples have been caged in unsightly iron railings but these are now coming down and the buildings are gradually being protected instead by archaeological parks. The aim is again to set them in an appropriate landscape and to tactfully discourage all but the seriously interested visitor from exploring the actual remains. Last year the entrance fees were raised from a sum hardly worth collecting to one comparable with museum prices in other European countries. The number of visitors has gone down while income has increased considerably. With free entry on Sundays this still leaves the sites accessible to all, but cuts down on wear and tear.

A.M. ■

no threat from each other or from the outside world. They lived in caves and mud-brick houses without a trace of any kind of fortification. The only things found from this period even resembling a weapon are two tiny arrowheads.

They also appear to have been unusually healthy with strong bones and teeth. Rather touchingly a few of them had bunions and one small child was buried with a puppy. It could be that only the privileged few were buried here, but several skeletons seem to indicate otherwise. These were men with particularly thick, strong limbs and distinctively craggy faces.

The same team (Doctors Anthony Bonnanno and Tancred Gouda of Malta, and Caroline Malone, Simon Stoddart and David Trump from England) has recently tentatively put forward a theory which might explain the whole temple phenomenon.

For a thousand years or more the new settlers seem to have maintained links with the outside world. They had tools of flint and obsidian, which could never have been obtained on Malta itself, and the tiny greenstone axes that were common exchange goods of the time. Their pottery remained similar to that on Sicily and the mainland of southern Italy. Then a distinctive local culture began to emerge. The pottery changed completely, unique bone pendants were made, of a shape found nowhere else, and local chert began to be used instead of the superior imported flint and obsidian. It was at this stage that the first temples were built. As the temple culture flourished, the temples themselves appear to have become the guardians of what remained of these now rare, imported goods.

The thinking is that, as the islands became increasingly isolated, the rivalry and prestige involved in foreign trade was transferred to the building of great monuments. As the population grew, every settlement not only had to have one of its own, but one bigger and better than all the rest.

Until recently it was assumed that the temple builders, after their last fine flourish at Tarxien, had been replaced by a very different race, who brought with them tools and weapons of copper and bronze. But there is now some evidence to show that the two cultures may have overlapped and that not all the temple builders were driven off the islands. It would be pleasant to think that Malta's modern building skills were a talent inherited from such remarkable ancestors. ■

ANN MONSARRAT
is a British writer and journalist. She is the author of *An Uneasy Victorian: Thackeray the Man*, a new edition of which was published in 1989 by Cassell, London.

BOOKS OF THE WORLD
by Calum Wise

Quizás tu nombre salve/Et si ton nom sauvait.

A bilingual anthology of Salvadorian poetry. Poems selected and translated by Maria Poumier. 452 pp. Editorial Universitaria de El Salvador/UNESCO. (Bilingual, Spanish/French).

This anthology of Salvadorian poetry is mainly devoted to the twentieth century and more than half of the contributors are still alive. Although the country's verse is relatively little-known, it "has contributed to Central American literature through outstanding personalities", as the essayist and poet Roberto Armijo, himself a contributor, points out in a foreword. These personalities include Don Francisco Gavidia, a major figure of the Modernist era, Juan Cotto, a forerunner of the avant-garde, and two lyric poets of great intensity, Claudia Lars and Roque Dalton—all of whom are featured in the anthology. The major themes here are the exploration of the Salvadorian soul; the search for a personal voice; identification with the "absent homeland"; myth and reality; and reaction against major trends in Western poetry such as symbolism and surrealism. The anthology culminates in the work of the so-called *Generación Comprometida*, the "Committed Generation". There is a dynamic ambivalence in these poets' use of words, which combines an awareness of their beauty with a mistrust of aestheticism, as there is in the contrast between the lyricism of their language and the primitive harshness of their imagery. The principal preoccupations are political commitment and the compromises life imposes. The title means "Perhaps your name may save", the name in question being that of El Salvador itself, which has the power of a magical incantation and evokes a universal land, at one and the same time global and local, that ultimately exists only in the human heart.

L'Epopée de Samba Guéladiégui

Recounted by Pahel Mamadou Baïla and translated into French by Amadou Ly. 200 pp. Editions Nouvelles du Sud, IFAN and UNESCO (in French).

This *daarol* (epic) in the Peul language is one of west Africa's most famous oral narratives, and four versions of it have already been published. Historical rather than mythological in form, in the manner of the *chanson de geste*, it tells the story of the rift between its Tukulor hero and his uncle Konko, who refuses to give him his share of an inheritance. From the tale emerges a portrait of the life and customs of the Denianke Peul before the eighteenth-century revolution during which the Muslims imposed their rule and their faith. *Daarol*, or *haala* (historical epics), are eclectic works in which versions of an original tale told by past storytellers—traces of whose wording are retained—are incorporated into the interpretation (a more accurate word would be performance) given to it by a contemporary *gawlo*, or griot, in this case Pahel Mamadou Baïla. In this epic the *gawlo* Sewi is at Samba's side throughout his quest. His presence

is important as an illustration of the griot's role in African social history and is particularly striking in view of Pahel's claims to descent from Sewi—further proof, if any were needed, of the profound symbiosis between story and storyteller. The *Epopée de Samba Guéladiégui* is a seminal work in its genre.

Old Czech Legends.
Alois Jirásek.
Translated with an Introduction and Glossary by Marie K. Holecek.
199 pp.
Forest Books/UNESCO.
(In English).

This collection of old Czech legends was originally intended for children, but parents may enjoy it even more, now that so many people are concerned about preservation of the cultural heritage in all its forms. Alois Jirásek, a student and teacher of history, wrote popular historical novels similar in spirit to those of Sir Walter Scott, who inspired the Romantic movement in Western literature at the start of the nineteenth century. Readers familiar with European folklore, especially that of central and eastern Europe, will find in these stories motifs and themes that also appear in Russian tales. The legends are here retold by Jirásek in the rather formal style, imbued with romantic and nationalist ardour, typical of the "national awakening" that fired central and eastern European cultures and peoples in the nineteenth century. The book is divided into five parts: "Old Czech Legends"; "Legends of Christian Times"; "Tales of Old Praha"; "Some Myths of the Middle Ages"; and "Ancient Prophecies". Each represents a different facet of Bohemian society or history. The tales are a seamless blend of romanticized historical facts and romantic or baroque fantasy, whose period charm encourages rather than hinders the reader from interpreting them on several levels. For example, two symbolic figures of the post-nuclear world, Faust and the Golem, feature in them. Ghosts, witches, mythical animals and magical objects intervene in the struggles of men against their fate. With the apparently naive symbolism of folk wisdom, the stories echo what many modern thinkers say in tortuous and complex ways: that the world of tomorrow will be multicultural. ■

Note: These three books form part of the UNESCO Collection of Representative Works.

RECENT RECORDINGS
by Isabelle Leymarie

JAZZ

Eastern Rebellion.
Simple Pleasure
Cedar Walton (piano), Ralph Moore (saxophones), David Williams (bass), Billy Higgins (drums)
CD Limelight 518 014-2

These four musicians, all thoroughly in tune with one another, offer pleasures that are rather less simple than the title of the disc suggests. Walton, Moore, Williams and Higgins play with disconcerting ease, giving the impression that they still enjoy each other's musical company even after many years together; but they are nonetheless brilliant craftsmen and past masters of their art. The four men were born to swing. The fresh and inventive treatment they give to standards such as "All the Things You Are" and "My Ideal" demonstrates their compositional talents as well as the new numbers do. As for Higgins, there is no drummer who more obviously enjoys himself when he's playing or who enters more fully into the music with his whole body. He has complete mastery over his drums, and his solos are constructed with great rigour.

Sixun. *Nomad's Land*
Michel Alibo (bass guitar), Jean-Pierre Como (keyboards), Alain Debiossat (saxophones), Arnaud Frank (percussion), Paco Sery (drums, percussion), Louis Winsberg (guitar)
CD Emarcy 514 474-2

This disc represents a successful fusion of funk, jazz and African music. Sixun, which brings together African and French musicians, is presently one of France's most popular groups, and it produces a lively, happy music that makes no great claims for itself but effortlessly suggests the warmth of the tropical countries from which it takes its inspiration.

TRADITIONAL MUSIC

Japan. *O-Suwa-Daiko Drums*
Musics and Musicians of the World
CD UNESCO D8030

These drums evoke the old Japan of Shinto divinities and warrior heroes. The ensemble is directed by Oguchi Daihachi, a musician born in Okatani in the prefecture of Nagano to a family that for generations had devoted itself to the preservation of the O-Suwa-Daiko. Some of the pieces performed here were passed down by priests; others like the Suwa-Ikazuchi served to invoke the gods to bring rain or victory in battle. This thunderous music, preserved from the distant past, evokes the atmosphere of some of the great samurai films.

The Complete Blind Willie Johnson
Roots 'n' Blues collection
2 CD set. Columbia 472190 2

The first blues singers to win an international reputation through their recordings were women like Bessie or Mamie Smith; but the pioneers of the style were men, singing to themselves on the road or in the fields to lighten their cares, or else with a few friends for amusement's sake. Blind Willie Johnson, who roamed the southern states, is one of the major figures of the early blues and of spirituals too, for the frontier between the two musics was not clearly defined at the time; though the themes might differ, the interpretation and the vocal leaps, inherited from field hollers and work songs, were for the most part similar. This authoritative set is, to the best of my knowledge, the first collection of recordings by a singer whose serious tone and controlled passion can still move listeners today.

CLASSICAL MUSIC

SAINT-SAENS. *Symphony No. 3*. MESSIAEN. *L'Ascension*
Orchestre de l'Opéra Bastille, conducted by Myung-Whun Chung
CD Deutsche Grammophon 435 854-2

Two superb symphonic works in which the organ plays a major part are conducted with intelligence and finesse on this CD by Myung-Whun Chung. Saint-Saëns was a talented organist who played in several Paris churches and had a particular affection for the instrument. His Third Symphony, dedicated to Liszt who strongly influenced him, unfurls its movements with lush sensuality. Messiaen, also an organist, strove to communicate his religious faith through his music. The instrument gives a mystic coloration to his orchestration that distinguishes it from the customary tonal palette. Although he was only 25 when he wrote *L'Ascension*, the work already prefigures his later experimentation with microtonality.

S. Vlavianos (orchestration and direction); Vivi Kitsou (singer)
Impressions of Greece
World Music Symphony Orchestra
CD Victorie Music 199152

These beautiful compositions, drawing on popular Greek melodies, have been orchestrated with brio by Stelio Vlavianos, a young composer who has studied in Athens and Paris and whose music contains dazzling highlights and undercurrents of surprising intensity. The pure, vibrant tones of the soprano Vivi Kitsou blend perfectly with the orchestra to evoke a certain Mediterranean past—that of the sirens seeking to enchant Ulysses. ■

LETTERS TO THE EDITOR

A FLYING BICYCLE

I enjoyed reading Edmond Petit's article "The Sky Horizon" in your July-August 1992 issue and would like to draw to your readers' attention the unjustly forgotten feat of Gabriel Poulain (1884-1953), who in 1921 made the first successful muscle-powered flight at the Longchamp race track in Paris, France. Poulain, a champion indoor racing cyclist, managed to lift a bicycle equipped with two aerofoils off the ground and fly a distance of over ten metres.

LÉON JACQUES MASSONEAU
LE BAILLEUL, FRANCE

ETHNIC GROUPS AND RESERVES

In the editorial of your June 1993 issue on minorities, I was struck by Federico Mayor's question, "Is it conceivable that the map of the world could ever be redrawn to conform with ethnic criteria?"

Western statesmen arrogantly ignored ethnic criteria when they drew the maps of black Africa and, indirectly, of central Europe. We see how successful that has been. The same thing happened in the Middle East....

It is also a pity that your issue only touched on the problem of indigenous minorities. Perhaps this was deliberate. How strange that the Western democracies, so enthusiastic about human rights, should accept the North American idea of "Indian reserves".

PATRICE THERET
SINGAPORE

THE BEAST THAT WILL NOT DIE

In view of the rising tide of racism, xenophobia and movements with fascist leanings, I think that you should produce, as a matter of urgency and a task in keeping with your objectives, an in-depth analysis of this problem (examining its historical, economic and psychological background as well as the political interests that ensure that this beast does not die). Such an issue should attempt to explain why and how such ideologies influence people who have nothing practical to gain from them.

FRANÇOISE SOLIGNAC
BAZAS, FRANCE

PRISONERS' AID

I have been a *Courier* subscriber for several years. I find the magazine interesting and instructive and use it for the courses I teach in prison schools. Why not devote an issue to the world's prisons and to ways of rehabilitating former prisoners?

DANIEL HORACIO LANGDON
BUENOS AIRES, ARGENTINA

EDUCATION FOR ALL

I am an Argentine teacher working in the city of Formosa, capital of the province of the same name, 1,250 kilometres from Buenos Aires. The working conditions for educators in this area are very hard, and the social situation is marked by uncertainty, fear and economic instability. We lack the most basic materials—chalk, blackboards, classrooms, etc.—but that does not prevent us from carrying on the fight against illiteracy.

After reading an issue of the *Courier*, I realized that there are people in other countries and on other continents who, despite cultural, social and linguistic differences, share the same educational interests and objectives. I thought that by pooling our scattered efforts we might succeed in turning "education for all"—one of UNESCO's priorities—into reality.

I am trying to make the children in my little school realize that the unique, fragile home we call Earth must be preserved and protected.

Thank you for publishing so many interesting articles. I have found an invaluable friend in the *UNESCO Courier*.

NORMA GRACIELA BENITEZ BOULOC
FORMOSA, ARGENTINA

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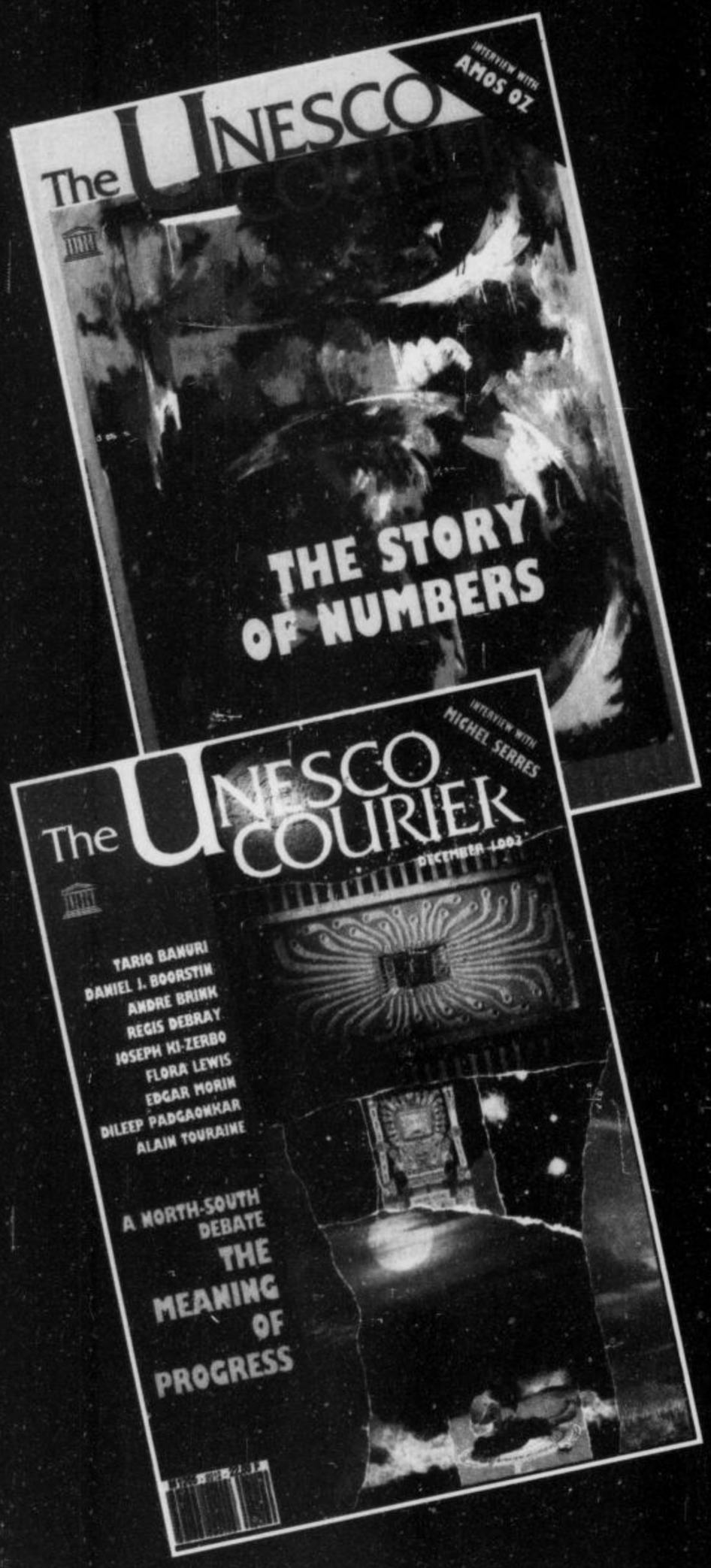

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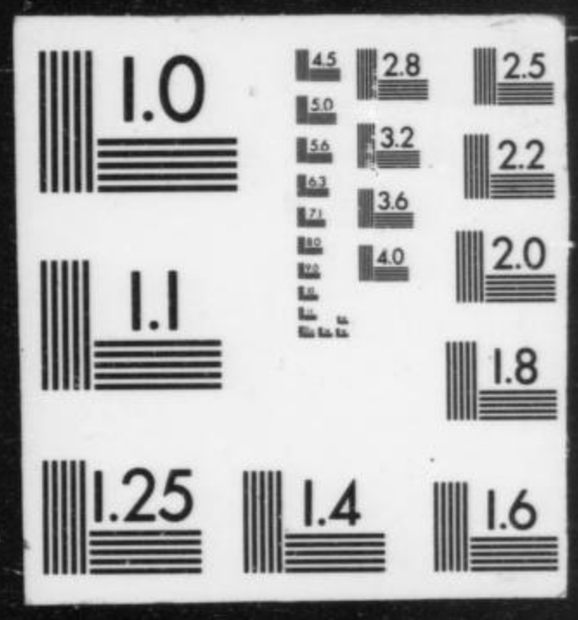
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